MODERN PACKAGING

SEPTEMBER 1943

NOLOGY DEPT.

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✓R v.17 Sept. 1943 - Feb. 1944

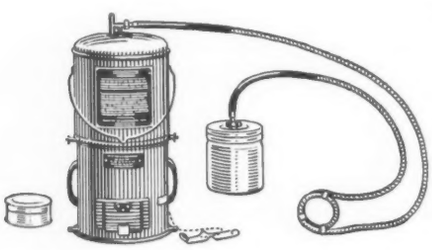
With one life to lose *he died a thousand deaths*

He was adrift on a rubber life raft.

His fight for life was a desperate one. The blistering sun was against him, and the wind, and the sea. And—toughest obstacle of all—he *had no drinking water!*

He had only one life to lose. But because of thirst, he died a thousand deaths.

You will be glad to know that our boys in the war no longer have to face this



dreaded ordeal. The life rafts and boats today are fitted with many life-saving devices recently developed by American ingenuity. Among these devices is a portable still which *converts salt water into fresh water.*

This portable still is a small compact unit weighing only four pounds for a three-man raft and eight pounds for a seven-man raft.

The heart of these stills is their fuel. It is vital that this compound be kept dry and ready for use at all times. To do just that, a Canco metal container—water, air, and dirt tight, with ready opener—is used.

Other life-saving units we make are tin containers for blood plasma . . . distress signal flare containers . . . hermetically sealed first-aid kits . . . containers for emergency field rations.

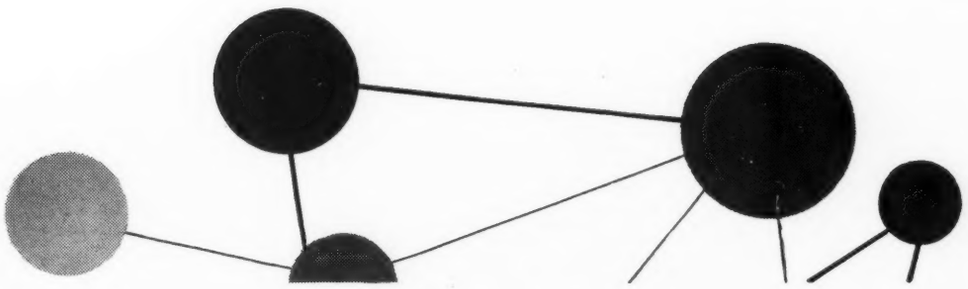
Add these containers to those items Canco makes for use against the enemy—complete torpedoes, shell containers, demolition kits, hand grenades, land mines, TNT containers, and many others—and you will understand where much of our metal is going.

Last year more food was packed in cans than ever before because of the extra needs of the Army, Navy, and the home front. This was made possible by the use of the wartime food container.

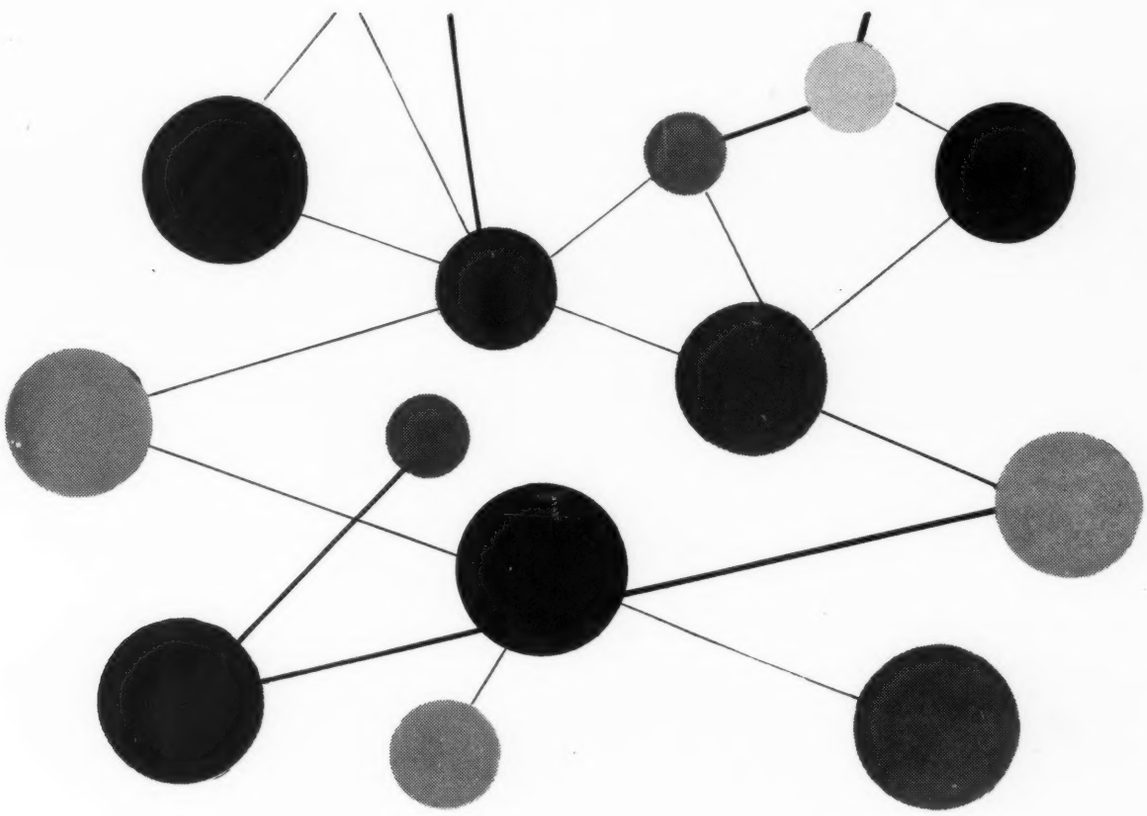
In addition, we are doing everything possible to develop suitable substitute containers for other products which have been limited by government restrictions.

AMERICAN CAN COMPANY

230 Park Avenue, New York, N. Y.



Design doesn't have to be an intricate pattern of variegated hues . . . a conglomeration of curley-cues . . . a monstrosity in pale mauve. Good design invariably is simple in plan and execution . . . a few skilfully placed lines and masses . . . one or two tastefully chosen colors. It is remarkable how a Phoenix C T Cap in one bright, interesting color can *set-off* a glass package and give it shelf appeal. Other advantages of this attractive, continuous-thread closure: Economical; simple in construction, precision made, standard; uniform in fit and appearance; adaptable to a wide variety of products, packages and methods; dependable; convenient to apply and remove; *decorative!* Phoenix Metal Cap Co., 2444 West Sixteenth Street, Chicago; 3720 Fourteenth Avenue, Brooklyn.



Modern Packaging

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VOLUME 17 **SEPTEMBER 1943** **NUMBER 1**

OCTOBER

In this issue Modern Packaging brings you an article showing why proper packaging materials are so essential to the efficient and economical use of air transport. Next month, a leading military authority will tell you how the problems of air cargo are being solved for the millions of pounds of freight going to war zones all over the world. This information will be of vital interest to every supplier and user of packaging materials entering into air shipments.

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In the past it has been our custom to publish a Volume Index with our September issues. This year, to save paper, we will not include the index with the issue, but will publish it separately and send it to any subscriber free on request to the editorial department.

Member of Audit Bureau of Circulations

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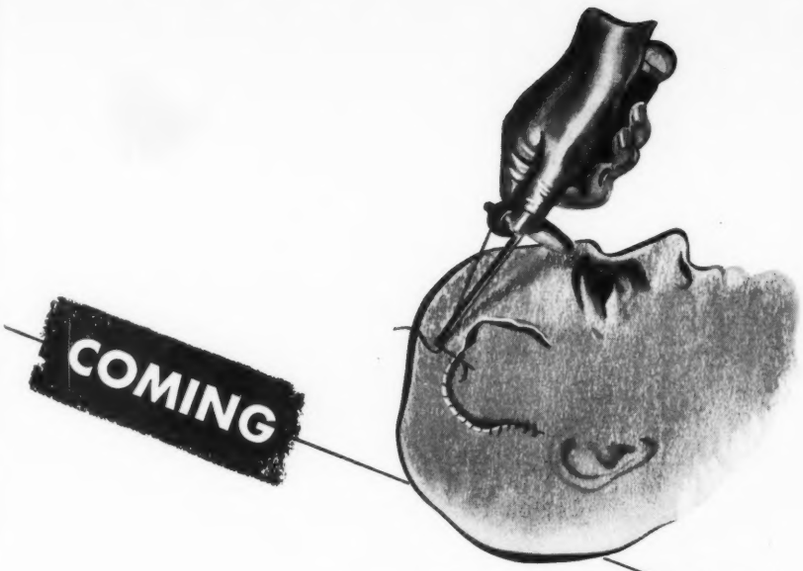


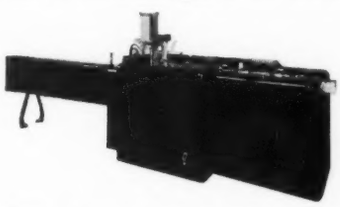
...A BETTER WORLD...AFTER VICTORY...

IN THE FIELD OF SURGERY

This is Singer Sewing Machine's new surgical stitcher in action closing a scalp incision. The instrument speeds up suturing (surgical sewing) by providing a continuous surgical thread, making it unnecessary for a surgeon to stop to rethread his needle. Needles can be set at eight different angles, so that a surgeon can get at tissues on the surface or deep inside.

Remember how the last war stepped up the pace of development in almost every field—aeronautics, medicine, automobiles, engineering?

It's happening in this war, too . . . the Post-War World will see important advances in the American standard of living. *New* packaging ideas, for example, born of wartime restrictions that have forced experts to work out new techniques . . . to adopt and adapt *new* materials, *new* designs.



Cartoning machine for packaging chocolate

Here at Redington we're sharpening our engineering and designing skills, too . . . learning how to do tomorrow's job better under the pressure of war work that has converted us from *custom* engineering to *quantity-and-quality* production. These new skills, applied to "The Packaging Machines of Tomorrow," will harness the dreams of designers, making their packaging ideas *practical and inexpensive* to produce.

So . . . keep on making Post-War plans for your package and when the war is over, let's get together.

F. B. **REDINGTON**, CO. (Est. 1897) 110–112 So. Sangamon St., Chicago, Ill.

REDINGTON

PACKAGING MACHINES

FOR CARTONING • WRAPPING • SPECIAL PACKAGING

SOMETHING TO THINK ABOUT

The time when you have to get out and SELL again is one day closer than it was yesterday.

Will your present packages be effective sales weapons? Are they as attractive and practical as your competitors'? Are they the kind of packages that dealers instinctively like to display? Are they easy to use? Are they economical to buy? ¶ A "no" answer to any of these check questions is a pretty good indication you need more productive packaging for competitive post-war selling.

SOMETHING TO DO ABOUT IT!

What better time than NOW to make a packaging change?

With rationed buying and restricted production, new packages can be introduced quickly without impairing sales. ¶ Ritchie designers and engineers will be glad to help you develop packages that stand head and shoulders above your competition—in eye appeal, in utility, in economy. ¶ Plan for tomorrow's needs—today—with Ritchie. It involves no cost or obligation.

SET-UP PAPER BOXES

FIBRE CANS

TRANSPARENT PACKAGES

ARMY ORDNANCE AWARD FOR MERITORIOUS PRODUCTION

Chicago District

W. C. Ritchie AND COMPANY

8847 BALTIMORE AVENUE • CHICAGO

NEW YORK DETROIT LOS ANGELES ST. LOUIS MINNEAPOLIS

Guarding products that guard health

an important wartime job for CEL-O-SEAL bands

Bottle closures on medical and other products used by our armed forces must be kept securely in place. Products that protect health must themselves be protected to assure full strength, quality and purity.

CEL-O-SEAL cellulose bands do this important job effectively. They forestall tampering with the product . . . help prevent evaporation or leakage and guard against the entrance of dust, dirt and germs. Bands are easily applied and add distinction to the package.

When you consider methods of sealing packages, consider CEL-O-SEAL. Write E. I. du Pont de Nemours & Co. (Inc.), "Cel-O-Seal" Section, Empire State Building, New York, N. Y.

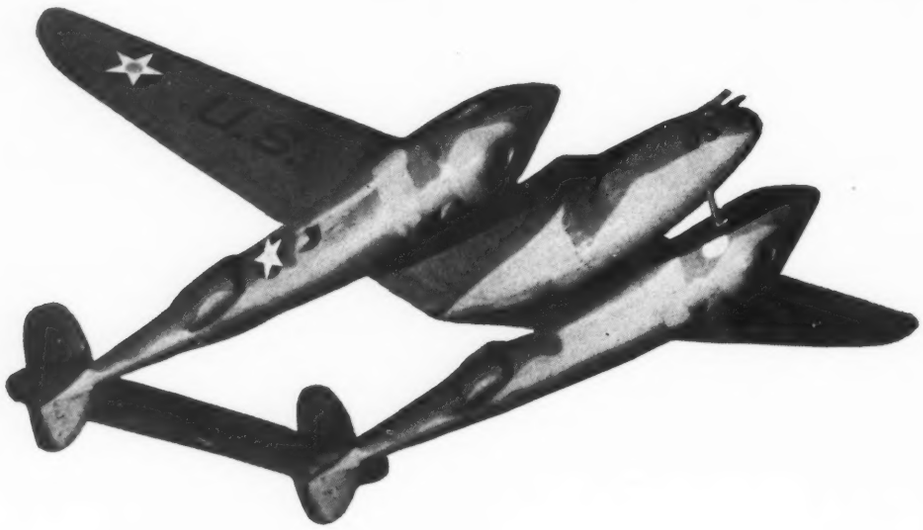
Also sold by Armstrong Cork Co., Glass & Closure Div., Lancaster, Pennsylvania—I. F. Schnier Co., 683 Bryant St., San Francisco, California.

DU PONT
REG. U.S. PAT. OFF.

CEL-O-SEAL
TRADE MARK
BANDS

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

"PROTECTIVE" COVER~



Official photo U. S. Army Air Corps

~*is a* CELLUPLASTIC *function, too!*

- *shatterproof*
- *seamless*
- *featherlite*

TRANSPARENT OR OPAQUE

Protecting the vital "cargoes" of life-saving or health-saving products against breakage in transit or during handling by soldiers or civilians is a "must" that is met by Clearsite *seamless* shatterproof resilience. Shape and color can be used to help identify the product for instant use in daylight or dark. . . .

Labels or instructions for use are permanent on Clearsite containers, for they are *processed* direct-on-containers.

Our Package Designers are at your service

FIRST IN CELLUPLASTICS
HYCOLOID-CLEARSITE

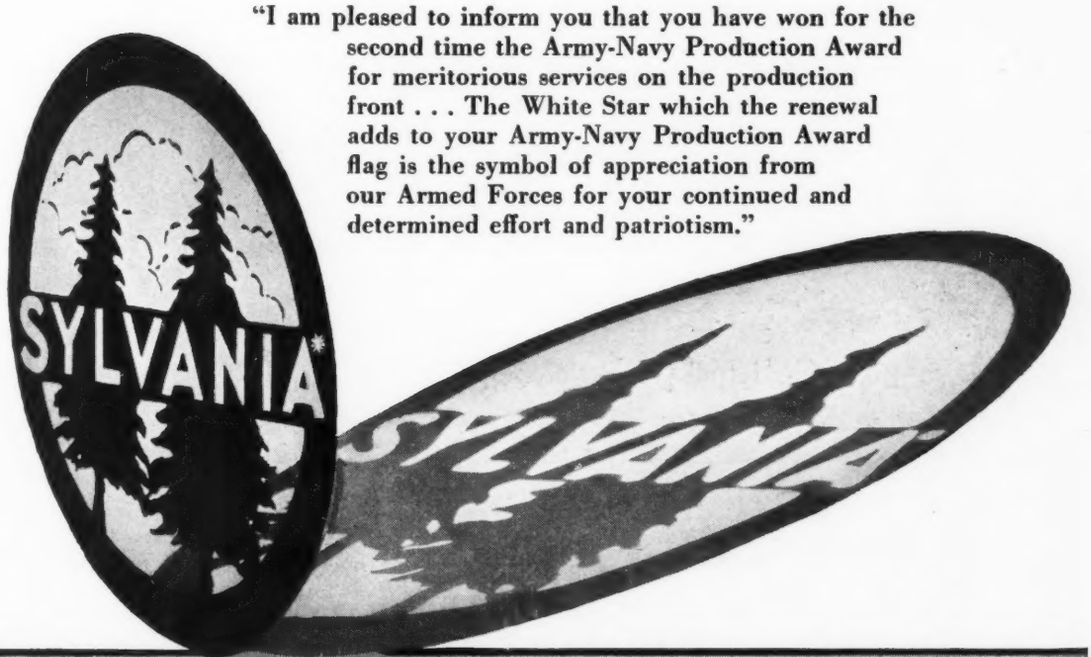
CELLUPLASTIC CORPORATION

40 AVENUE L NEWARK, N. J.

~a Star is added . . .

In a letter from the War Department to the men and women of the Sylvania Industrial Corporation, Fredericksburg, Virginia, Under Secretary of War, Robert P. Patterson states . . .

"I am pleased to inform you that you have won for the second time the Army-Navy Production Award for meritorious services on the production front . . . The White Star which the renewal adds to your Army-Navy Production Award flag is the symbol of appreciation from our Armed Forces for your continued and determined effort and patriotism."



Sylvania Cellophane*

SYLVANIA INDUSTRIAL CORPORATION

General Sales Office: 122 East 42nd Street, New York 17, N. Y.

Works and Principal Office: Fredericksburg, Virginia

*TRADEMARK REG. U.S. PAT. OFF.

THE GLAD RAG
Smooth Quick Easy
1933
NO PASTE · NO POWDER · NO POLISH NEEDED
THE GLAD RAG
Quick and Easy
CLEANS · POLISHES SILVERWARE · JEWELRY
ALL METALS · GLASS · SPECTACLES · TILE
THE CLOTH IS THE SAME!
1943

EXPERIENCE!

Back in 1933 our execution of the "Glad Rag" Cellophane package took 1ST prize for the finest transparent bag in the All America competition. Ten years later this bag, printed all over on white paper is judged

BEST ALL-AROUND "SUBSTITUTE" PACKAGE

produced as the Result of Wartime Restrictions in the 10TH Annual "5 & 10" packaging contest.

Consult ROYAL for the "Know-How" derived from 48 years of pioneering service to the specialty packaging field.

THOMAS M ROYAL & COMPANY

PHILADELPHIA USA

NEW YORK BOSTON CHICAGO ATLANTA PITTSBURGH BEAUMONT ST LOUIS SYRACUSE
SEATTLE SAN FRANCISCO DAYTON TOLEDO DENVER NEW ORLEANS BRYN MAWR

Rescue in New Zealand!

One day last April Mr. and Mrs. T. W. Harriman, of Auckland, New Zealand, were indulging in one of their favorite pastimes, "beachcombing". As they strolled along the sands near Auckland, they spied a silvery gleam in the surf.

It proved to be a small packet made of aluminum foil laminated with acetate film. It was labeled "Coffee Product". An American soldier or sailor would have recognized it as a packet of Ration K Coffee, lost at sea and washed ashore.

Something new and strange to the Harrimans, they took it home, opened it and, following the printed directions, made themselves two cups of coffee by simply mixing the contents in hot water. They ***"found it to be delicious"***.

In his letter reporting this incident, Mr. Harriman said, ***"The fact that the contents were in perfect condition after lengthy immersion in sea water speaks highly of the quality of the article and the method in which it is packaged"***.

In the laboratory, this coffee packet has been put through tests far more rigorous than this interesting, actual experience. Immersed in water, it withstands a vacuum pull of over 26 inches of mercury without admitting moisture through the seal or the membrane.

Alcoa Aluminum Foil plus a thermoplastic film plus heat-sealing gives the perfect package for hygroscopic products. This combination excels in preserving freshness, flavor, volume, aroma and color of products that are sensitive to air, light, heat and gain or loss of moisture. Its sparkling beauty makes a handsome package, too.

At present, heat-sealed aluminum foil packages can be supplied for only essential purposes for the armed services. These uses prove the outstanding advantages of these packages, advantages that your product will be able to enjoy when the war ends.

Now is the time for package designers and package manufacturers to start Imagineering in that direction. For pointers on how to proceed, write ALUMINUM COMPANY OF AMERICA, 2129 Gulf Building, Pittsburgh, Pennsylvania.

Coffee Product
Dissolve in ½ canteen cup hot or cold water. Stir well.
Packaged by Miles Laboratories, Inc.
Elkhart, Indiana, U.S.A.

This is the kind of package the Harrimans found (shown here slightly smaller than actual size). It consists of Alcoa Heat-Sealing Aluminum Foil laminated with acetate film. Laminating and printing are done by Dobeckmun Company, Cleveland. Filling and heat sealing, by Miles Laboratories, Inc., Elkhart, Ind.

Think of ALCOA ALUMINUM

when you think of tomorrow's packages

A Fine Old House CONVERTS TO A

Pre-War metal-end canister

New metal-saving carton

The photographic realism of brilliant green grass adds sales appeal to this new Scott package. *Coated* Lithwite, with its finer printing surface, makes it possible to secure such results — and to secure them economically. If you wish to investigate the possibilities of this unique paperboard, write. We'll gladly send printed samples.

A SMART NEW PACKAGE

Famous Scotts Lawn Seeds now marketed in *folding* cartons of velvet-smooth *Coated* Lithwite

FOR YEARS the famous firm of O. M. Scott & Sons, Marysville, Ohio, packaged their pedigreed lawn seeds in metal-end canisters. Then came the war, and a packaging problem for the Scotts. But they did not let any grass grow under their feet.

Working closely with Gardner-Richardson, a folding carton of *Coated* Lithwite was quickly developed which more than met every requirement.

This revolutionary *coated* paperboard made it possible to produce tight-sealing cartons with the high colors and the high-quality look which has always distinguished Scott packages. But the Scotts are effecting more than a metal saving by this satisfactory change-over. They are saving transportation costs and upwards of 80 per cent in warehouse space, for these folding cartons ship flat and store flat.

The Scott package is one of the many successful change-overs developed by Gardner-Richardson—and some of these are proving so practical, so economical their use may be continued after the war.

The GARDNER-RICHARDSON Co.

Manufacturers of Folding Cartons and Boxboard

MIDDLETOWN, OHIO

Sales Representatives in Principal Cities: PHILADELPHIA • CLEVELAND • CHICAGO • ST. LOUIS • NEW YORK • BOSTON • PITTSBURGH • DETROIT

GARDNER-RICHARDSON
FROM PULP TO FINISHED PRODUCT
ENGINEERED PRECISION

Machine guns nest under paper bushes

You couldn't spot this machine gun a hundred feet away. Paper melts it into the background. ● Airplane runways look like green fields—when they're covered with paper grass. ● A squadron of planes looks like a perfect target for bombers—until you realize they're dummy planes, all decoy, partly paper. ● In fact, the camoufleur is drawing heavily upon paper to help his "disruptions, tonedowns and concealments." ● And the paper industry is turning out paper strips, garlands and expandable nets in great variety and quantity. ● There always seems to be something new for paper to do in this war—paper practice bombs, paper fins for incendiaries, paper oil containers. Paper is doing thousands of new jobs like these, meeting new wartime demands, and opening new industrial frontiers. ● We do not make paper for camouflage. Our specialty is fine printing paper, in great quantity —*in fact, a thousand miles of paper a day.* Right now, Uncle Sam has us making many papers we've never made before. ● But we are directly concerned with the widest possible range of new uses for paper. And we are helping now to master some of the problems of protective wrappers through protective coating, lamination and heat sealing—all of which are making definite contributions to the war effort. ● In the meantime, Oxford merchants and Oxford salesmen are at your service with quality papers for many uses.

OXFORD PAPER COMPANY

230 Park Avenue, New York 17, N. Y.

• • •

Mills at Rumford, Maine & West Carrollton, Ohio

Western Sales Office: 35 E. Wacker Drive, Chicago 1, Illinois

three-ply

Pack it in ~~Grease~~

Thanks to packaging teamwork, rifles shipped to the fighting fronts today arrive ready for immediate use—free of their thick cosmoline coating used back in 1918. Special three-ply moisture-proof boots guard them against corrosion on their long voyages to combat zones.

To the spectacular success of this development, Lumarith contributes its part. For Lumarith is not only a barrier against water, oil, grease—it protects against mold, does not dry out, does not become brittle.

For packaging ordnance supplies, food, equipment, Lumarith contributes its outstanding properties to the United Nation's drive for victory.

Celanese Celluloid Corporation, *the First Name in Plastics*, 180 Madison Ave., New York City 16, a division of Celanese Corporation of America sole producers of Lumarith* and Celluloid* plastics . . . Representatives: Cleveland, Dayton, Philadelphia, Chicago, St. Louis, Detroit, Los Angeles, Washington, D. C., Leominster, Montreal, Toronto, Ottawa.

*Trade Marks Reg. U. S. Pat. Off.

This ordnance wrap fabricated by U. S. Envelope Company, Container Division

Reynolds "Fighting Foil"

. . . Bodyguard for Bullets!

CORRODED BULLETS JAM GUNS! That's why Reynolds Metals "invasion-proof" packaging for .30 caliber aircraft ammunition is, today, serving on every fighting front — protecting cartridges against the invasion of dust, grit and moisture. It's air-tight, water-tight . . . giving *really armor-clad protection without the use of steel.*

This new wartime packaging is a solid sheet of metal foil laminated to varied processed materials and securely heat sealed. Truly "fighting foil" . . . developed by Reynolds . . . produced by Reynolds . . . and "battle-tested" on every worldwide fighting front, where it is now protecting foods, drugs, ammunition and supplies under every wartime condition.

Let Reynolds apply their extensive packaging research and experience to your own specific needs. Representatives available throughout the country.

AT LEFT: *.30 caliber cartridges first see the light of day as a link belt of 100 is removed from its protective Reynolds casing.*

BELOW: *100 cartridges to a carton—12 cartons to a case. Total—1200 rounds of aggravation to the Axis.*

RIGHT: *Ammunition arrives at an air base. Across oceans—through every element—but still in the same perfect condition as the day it was packed . . . thanks to Reynolds packaging.*

REYNOLDS BATTLE-TESTED MATERIAL

MEETS THESE ARMY-NAVY REQUIREMENTS!

1. ***Positive Protection Against Moisture-Vapor Transmission.***
2. ***Immersion-Proof. Keeps Water Out!***
3. ***Protection Against Insect Infestation, Odors and Light.***
4. ***Substantial Saving in Tin, Steel and Other Strategic Materials.***
5. ***Saving in Space, Especially Shipment and Storage of Empties.***
6. ***Saving in Weight.***
7. ***Serviceability Under Export Conditions.***

REYNOLDS METALS COMPANY

FOIL DIVISION · GENERAL OFFICES · RICHMOND, VA.

AMERICA'S GREAT NEW SOURCE OF ALUMINUM

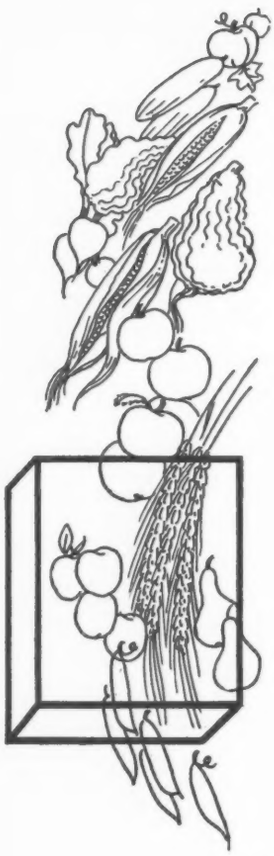
REYNOLDS ALUMINUM

OUT OF THE GROUND INTO THE SKY

REYNOLDS METAL

DETROIT PUBLIC LIBRARY

WHEN THE FARMER'S JOB IS DONE...



THE farmer . . . like his fellow Americans in industry and commerce . . . is working to increase his production in every way. Food is a weapon of war and the growing of food and still more food is an important duty to our country. But when the farmer's job is done, we must rely upon the resourcefulness of the processors and packers of food so that the fruit of his labor may be properly preserved . . . ready for consumption whenever and wherever needed.

The scarcity of some materials has made this task difficult, but not impossible. Hundreds of new packaging ideas have been developed to meet present needs by manufacturers of paper, folding cartons, tubes, bags, and containers of all types. Our own research staff has perfected many such ideas, and our great mill at Milford, N. J., is given over almost entirely to special papers for the food industry.

Increased demands and limitations on production now make our acceptance of new business almost impossible. However, if you have a problem in the protective packaging of food, you may be sure that there is someone, somewhere, who can solve it. We keep in close touch with the new developments of leading suppliers in all fields, and we can often still serve you by finding some alternate solution to your requirements. Requests for information and advice will always continue to receive our cooperative and intelligent attention.

RIEGEL PAPER CORPORATION

342 MADISON AVENUE • NEW YORK 17, NEW YORK

The can that Russia rates above guns and planes

A LEND-LEASE AUTHORITY said recently that Russia has been giving our food shipments even higher priorities than guns, planes or tanks!

Most food is going to war in cans—whether it's prepared, dehydrated or dried. And whether it's going to Russia, Britain, China or to our own fighting men all over the world.

Did you realize that our soldiers have a dozen different combat rations—and that most of these are packed in cans?

Without the tin can, lend-lease and military supply would fail. The can is as tough as the Russians. It endures the cold of Iceland, the heat of Africa. It can be stored anywhere, even outdoors.

The can saves food from contamination in bombed areas. It can be dropped without harm to beleaguered forces. And it keeps out water, light, dirt, gas and insects.

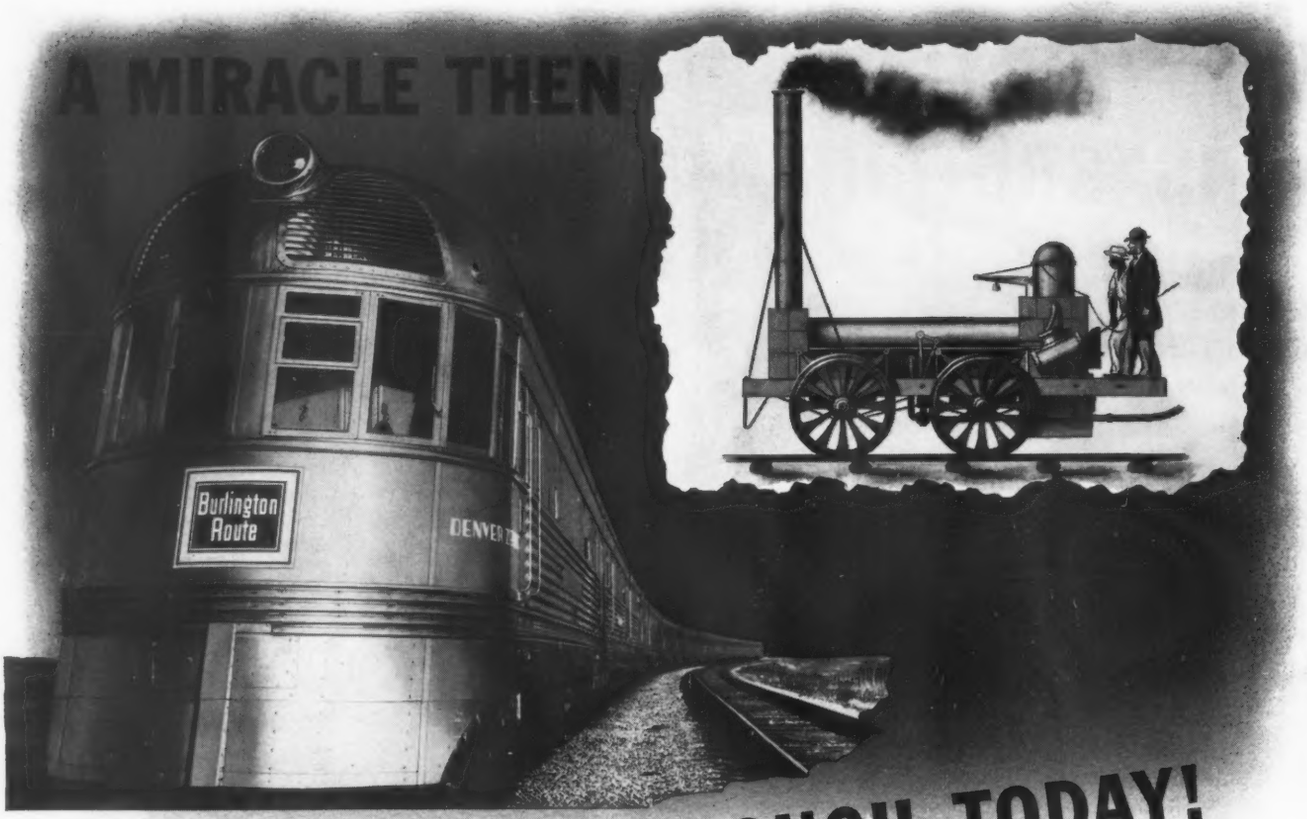
Cans for civilians are limited now, but the war cans will be peace cans one day. And better cans! We are learning plenty as "Packaging Headquarters for America at war."

TO MAKERS OF WAR GOODS

Rushed as we are, we can still take on more war work. A part of our vast metal-working facilities for forming, stamping, machining and assembly is still available. Write or phone our War Products Council, 100 E. 42nd St., N.Y.C.

CONTINENTAL CAN COMPANY

HELP CAN THE AXIS
—BUY WAR BONDS



BUT NOT GOOD ENOUGH TODAY!

Nicholas Cugnot's steam engine attained a speed of 2½ miles per hour in 1769 . . . and the old "Iron Horse" of 1826 made transportation history. But today, speeds of over 100 miles per hour are possible for trains in regular service.

NEUTRAGLAS . . . offering the highest resistance to solvent action and chemical attack . . . was developed by Kimble because no glassware can be just "good enough" if better is obtainable.

Standardize NOW *on Kimble Ampuls, Serum Vials, Serum Bottles and Clinical Glass containers of* NEUTRAGLAS.

• • • *The Visible Guarantee of Invisible Quality* • • •

KIMBLE GLASS COMPANY • • • VINELAND, N.J.

THERE'S PLENTY OF CORK . . .

YES, there's plenty of cork available right now to help glass packers solve one of their most serious wartime packaging problems.

Restrictions on the use of metal and molded caps are causing manufacturers, in many different fields, to change to corks. More restrictions *may* be coming, but they need not affect you seriously if you have your arrangements made to replace your critical closures with corks.

You may need corks sooner than you think. The cork industry is doing everything possible to assure adequate supplies—but remember that a last minute rush of orders may create a production bottleneck, and cause unnecessary difficulties and delays in your plant operations.

We suggest that you be prepared—that if you think you will need corks, do these things *now:*

1. Get in touch with your bottle manufacturer and determine the bottle finishes you may have to use.

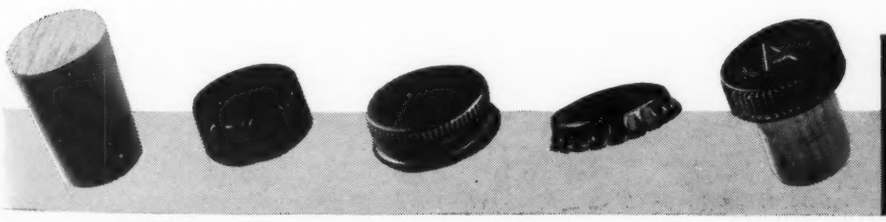
2. Determine the types, sizes, and quantities of the corks you may have to use. If at all possible, plan to use standard-sized corks. Corks which are special in top diameter, length, or degree of taper require extra time and material—thus reducing the total number of corks the cork industry can supply.

3. Get in touch with your nearest Armstrong representative and work out a tentative production and delivery schedule with him. Armstrong's 83 years of leadership in the cork field, plus its experience as a large producer of metal and molded caps, assures you of expert and impartial advice on all closure problems.

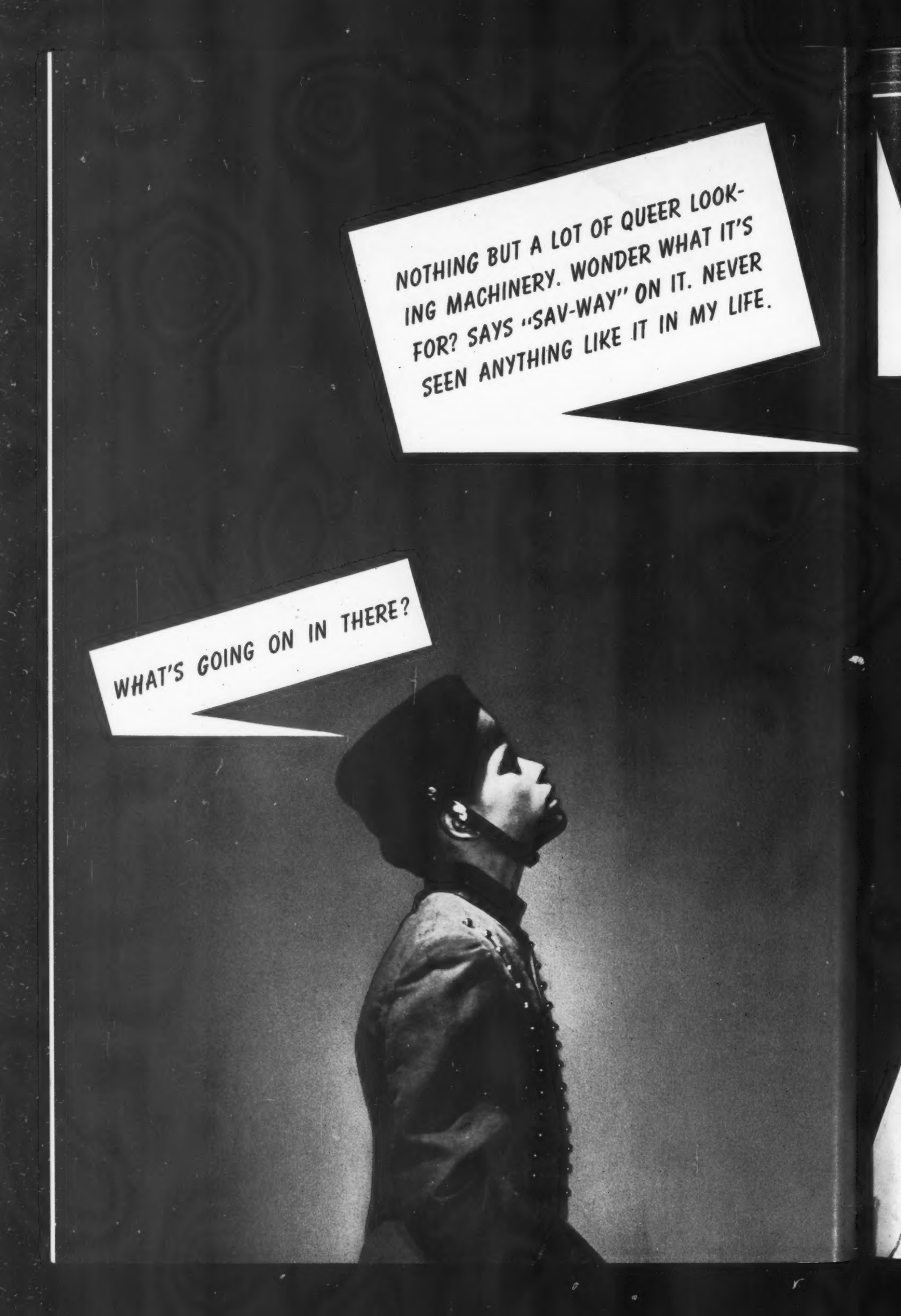
4. If you are definitely sure you'll need corks, *order them now.*

Right now the Armstrong Cork Company is devoting its entire time and capacity to lining up domestic production to take care of as many potential cork users as possible.

To get expert, impartial advice on all problems arising out of this latest wartime closure situation, see your Armstrong representative today, or write the Armstrong Cork Company, Glass and Closure Division, 5909 Prince St., Lancaster, Pennsylvania.



ARMSTRONG'S CORKS and CAPS


NOTHING BUT A LOT OF QUEER LOOKING MACHINERY. WONDER WHAT IT'S FOR? SAYS "SAV-WAY" ON IT. NEVER SEEN ANYTHING LIKE IT IN MY LIFE.
WHAT'S GOING ON IN THERE?

Keep an Eye On
Saw-way INDUSTRIES
4875 EAST EIGHT MILE
DETROIT, MICHIGAN
Representatives throughout U. S. A. and Canada

WEATHERPROOF ADHESIVES . . . *for* WATER-RESISTANT PACKAGES

● Manufacturers are depending more and more on GLU-WELD adhesives for sealing and manufacturing weatherproof containers. They are used for sealing waterproof duplexed stocks and "V"-type solid fiber cases, manufacturing ration boxes and other war-used folding cartons as well as waterproof bags.

OVERSEAS SHIPMENTS

Especially designed to meet the needs of packagers making overseas shipments, these fine adhesives offer many potential uses for post-war industry. They are stronger, more water-resistant and easier to apply than adhesives available before the war.

We will be glad to send you samples of GLU-WELD adhesives and request that end use information be submitted because certain ingredients of GLU-WELD adhesives are under Allocations restrictions.

GLU-WELD IS AVAILABLE

IN THE MIDWEST

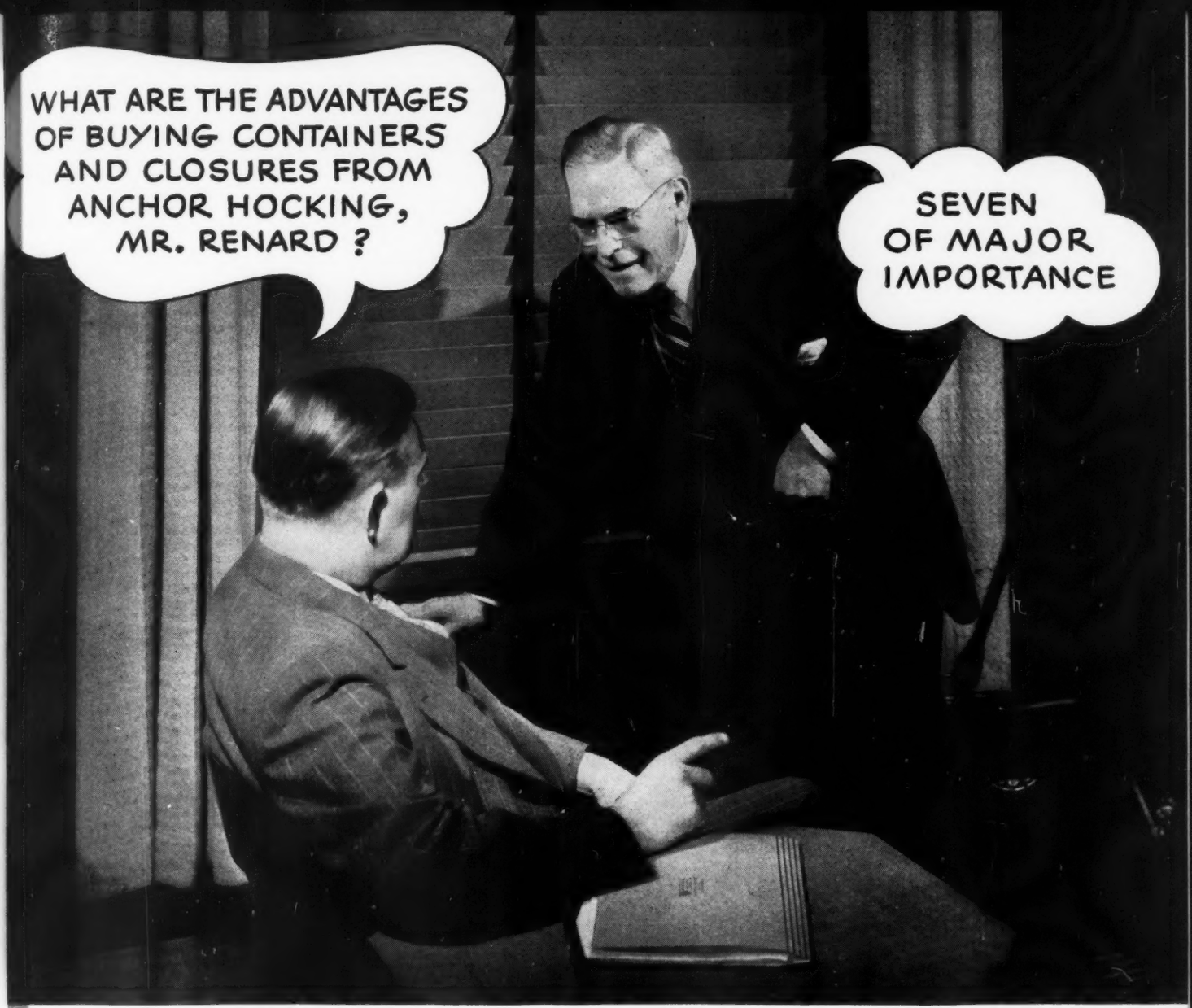
The F. G. Findley Company

1230 NO. 10th STREET • MILWAUKEE 5, WIS.

IN THE EAST

Union Paste Company

1605 HYDE PARK AVENUE • HYDE PARK, MASS.



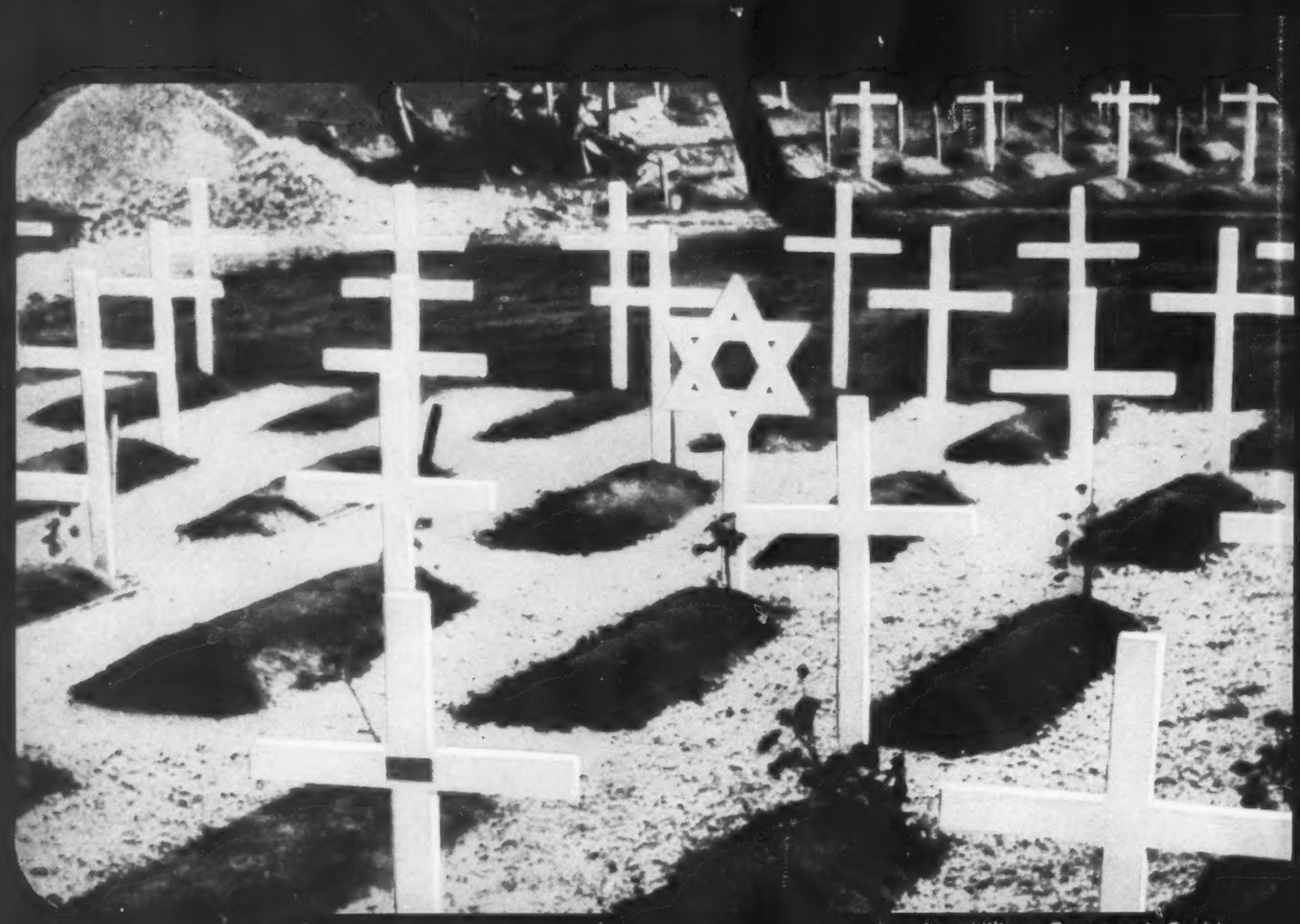
First, a complete line of standardized glass containers for every packaging need. *Second*, a line of fourteen metal and molded closures, and sealing machines. *Third*, coordinated service through a single source of supply. *Fourth*, Experimental and Research Laboratories to help solve your packaging problems. *Fifth*, an Engineering Division to help you set up your production lines. *Sixth*, a stable business organization, adequately backed, whose history of steady, successful growth gives you assurance of quality and reliability. *Seventh*, the experienced counsel constantly available to you through Anchor Hocking's field representatives, all of whom have spent many years servicing packers' and manufacturers' container and closure needs.

ALBERT RENARD, one of Anchor Hocking's ablest and most popular men, has been a member of the Anchor Hocking family for 24 years.

ANCHOR HOCKING

GLASS & CAPS

ANCHOR HOCKING GLASS CORPORATION · LANCASTER, OHIO



American Military Cemetery in Tunisia

They have not LIVED *in Vain*

THEY have not lived in vain, the men who died to win the mountain fortress—"Hill 609." Below the hill—beneath the waves of wheat that clothe the slope, they lie in graves the natives care for as their own. They have not lived in vain, the men who died opening the gateway to Bizerte—the gates to freedom.

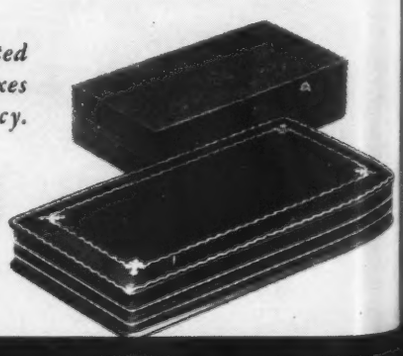
They have not lived in vain, for they have made a contribution to mankind's growth—no less than scientists who isolate a germ or formulate a serum to prevent disease. They lived and fought that we be not denied the right to speak honestly, to feed and shelter those we love, to worship in the temple of our own choosing, to walk fearlessly among our fellow men.

They have not lived in vain, the men who lie at peace beneath the white crosses and the Star of David. Men of all faiths—no lines of color, creed or race. They lived in unity—united they rest . . . in the tidy graves at the foot of Hill 609.

They lived to serve us well. It is our turn now to serve them well—to carry forward their ideals into the Peace to come. We know they have not *lived* in vain. We shall make sure they have not *died* in vain.

One of a series of editorials published in the interest of the War Effort. Back up our heroes! Buy more bonds!

Arrow is proud that its facilities have been enlisted by the Army and the Navy to make many of the boxes which hold the medals for heroes of democracy.

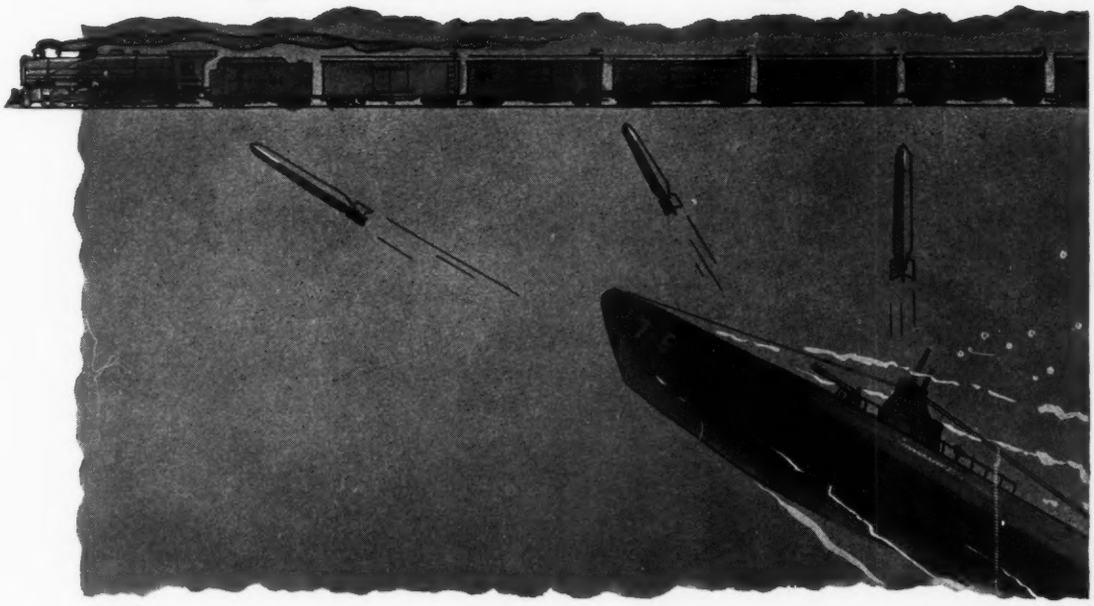


Arrow BOXES AND DISPLAYS

ARROW MANUFACTURING COMPANY, INC., 15th and Hudson Streets, Hoboken, N. J.

SUB-STANDARD PACKAGING

Torpedoes Shipments



FANTASTIC? Not at all. Poor packaging is helping to sink rail shipments at the rate of 275,000 loss claims a month in the U. S. Vital materials are being wasted . . . manpower is being wasted . . . shipping space is being wasted . . . Victory is being delayed . . . *unnecessarily.*

Inferior packaging may appear more economical. It isn't. A few additional pennies invested in sufficiently rugged and properly engineered corrugated boxes insure production factors worth hundreds of dollars.

If you're concerned with safer delivery of your products . . . and who isn't? . . . ask the H & D Package Laboratory to analyze your corrugated shipping boxes. They can show you practical ways to armor your products . . . and save you money.

Protect the Product

WAR BONDS pack a punch.
Buy them regularly.

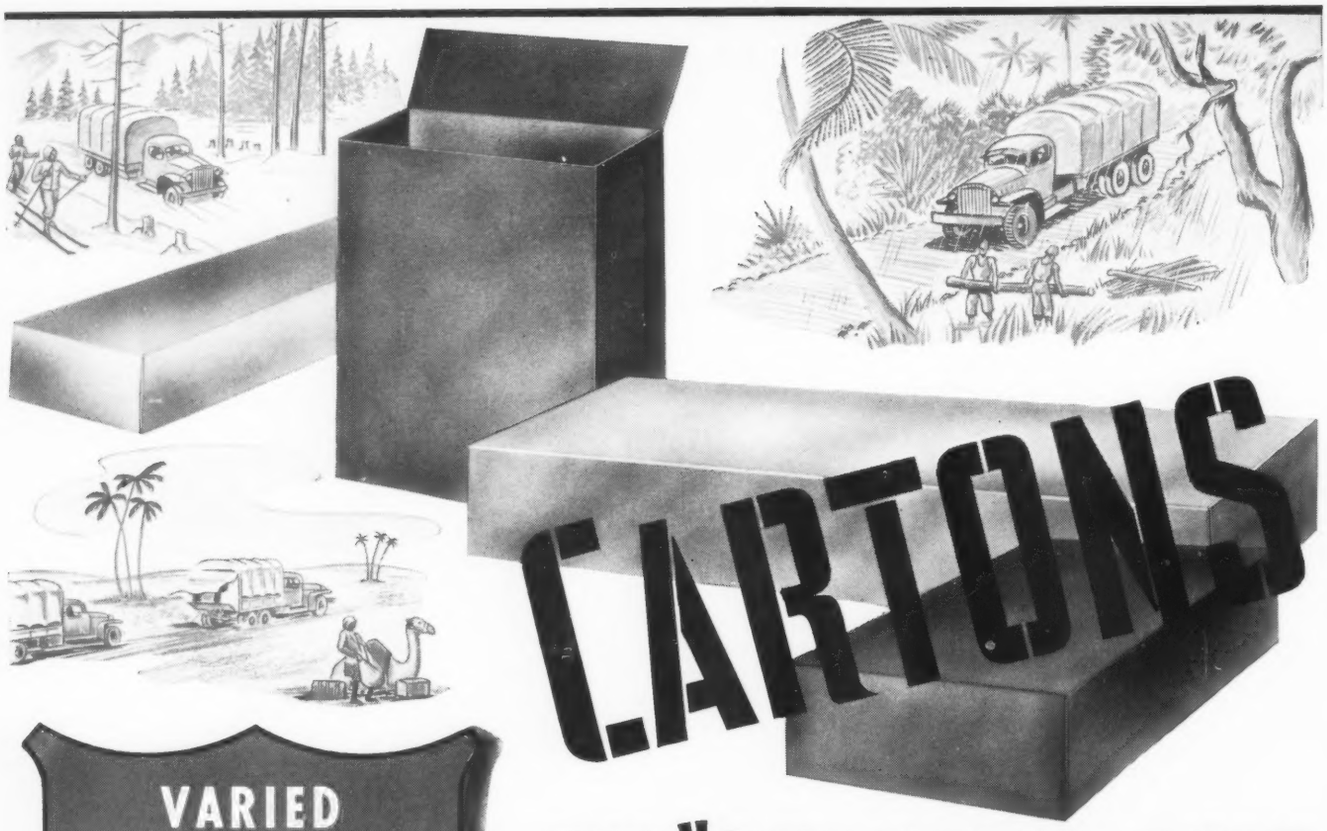
BETTER SEE H&D AUTHORITY ON PACKAGING

WRITE FOR THESE FREE PACKAGING "TEXT-BOOKLETS"

You'll find them invaluable as a handy "refresher-course" in economical, efficient packaging. Full of practical information on every phase of shipping and distribution, they'll save you time and trouble all year 'round. For free copies, write . . .

HINDE & DAUCH, Executive Offices:
4314 Decatur Street, Sandusky, Ohio

FACTORIES in Baltimore • Boston • Buffalo • Chicago • Cleveland • Detroit • Gloucester, N. J. Hoboken • Kansas City • Lenoir, N. C. • Montreal • Richmond • St. Louis • Sandusky, Ohio • Toronto



CARTONS

TO "DELIVER THE GOODS" *INTACT*

IN war goods packaging the carton is more than a carrier, more than a "frame" for its contents. In its construction and in its component materials there are opportunities to add *protection*, vitally needed for war's world-wide distribution. Protection against moisture-gain or loss, against sifting, grease penetration, insect infestation — these properties and more can be "built in" to war goods cartons. Menasha's facilities for producing, laminating and treating paperboard and Menasha's modern carton fabricating plants are producing millions of war materiel cartons to "deliver the goods" intact!

Send for our "Wartime Packaging" Booklet today

WAR PRODUCTS DIVISION
THE MENASHA PRODUCTS CO.
Division of Marathon Paper Mills Co.
MENASHA, WISCONSIN

VARIED PAPERBOARDS AND CONSTRUCTION

A special munitions carton construction by Menasha made it possible to machine-package certain shells, saving time and labor . . . A laminated moisture-proof board keeps Army ration tablets dry and fresh . . . A laminated grease-proof board makes a perfect consumer-size package for dried eggs . . . Lend-Lease dried soups are packed in a laminated moisture-proof carton which is constructed to be completely sift-proof . . . All are Menasha made. There are hundreds of varied ideas in composition and construction of war cartons which Menasha's pulp-to-carton production makes possible for your war job.

MENASHA

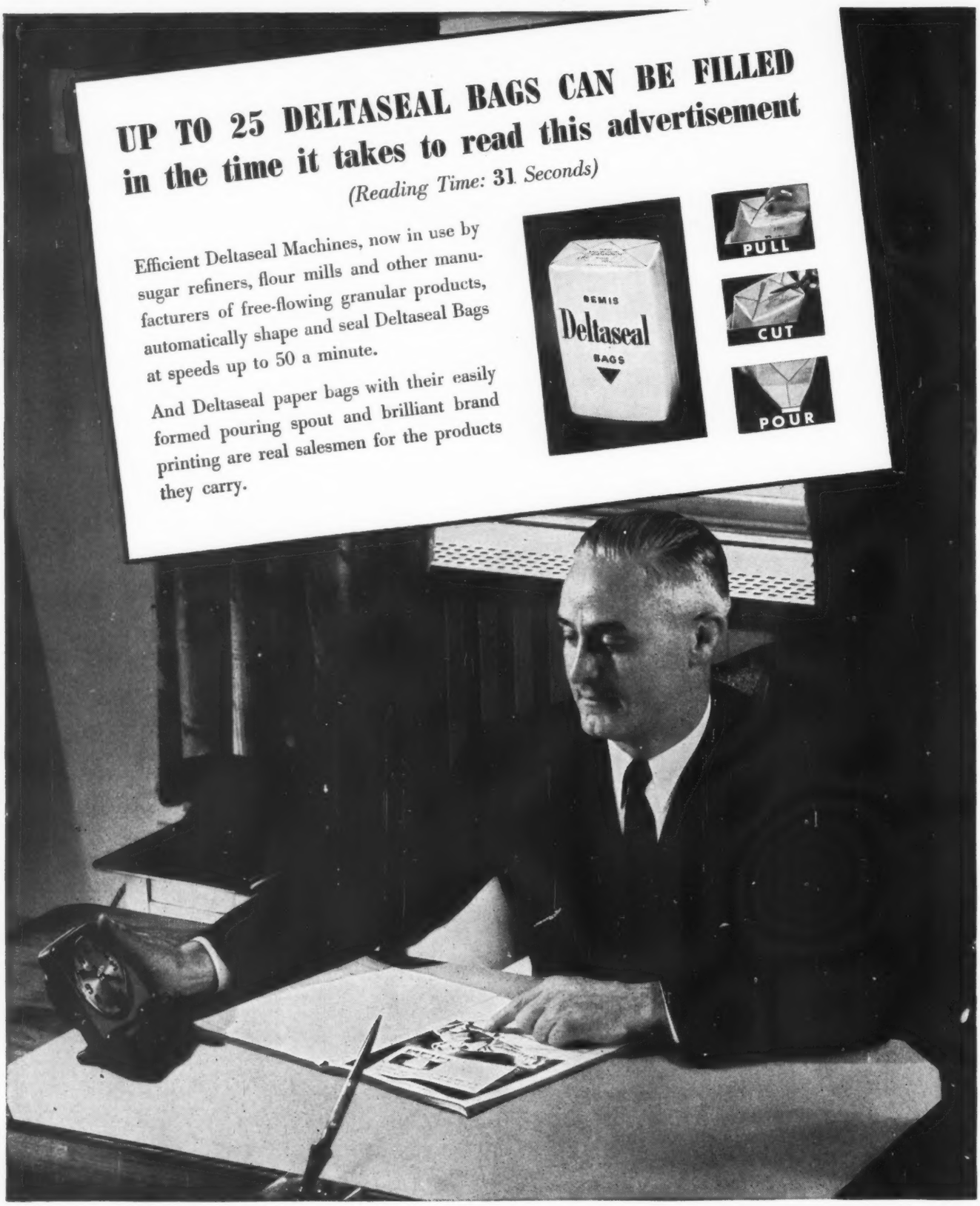
MENASHA PRODUCTS

CARTONS, LINERS
BAGS AND OVERWRAPS

It's fun to play house

It's fun to play house, little girl, but not quite so much fun for mother to keep house these wartime days. • She must carefully consider all the factors involved in the planning of adequate and balanced meals for her family. • However, because of the cooperation between government and the food packers, her work is not as difficult as it might be, and there is plenty for all. • Here at Hazel-Atlas we are helping these packers by devoting more production than ever to the manufacture of standardized food containers. Proper nourishment at home and for our fighters abroad will help shorten the war. • This means that when you keep house, little girl, it will be fun.

HAZEL-ATLAS GLASS COMPANY
WHEELING, W. VA.


UP TO 25 DELTASEAL BAGS CAN BE FILLED
in the time it takes to read this advertisement
(Reading Time: 31 Seconds)
Efficient Deltaseal Machines, now in use by sugar refiners, flour mills and other manufacturers of free-flowing granular products, automatically shape and seal Deltaseal Bags at speeds up to 50 a minute.
And Deltaseal paper bags with their easily formed pouring spout and brilliant brand printing are real salesmen for the products they carry.
BEMIS
Deltaseal
BAGS
PULL
CUT
POUR

BEMIS BRO. BAG CO.

Headquarters for the

DELTASEAL System of PACKAGING

Minneapolis, Minnesota

OFFICES: Baltimore • Boston • Brooklyn • Buffalo Charlotte • Chicago • Denver • Detroit • E. Pepperell Houston • Indianapolis • Kansas City • Los Angeles Louisville • Memphis • Mobile • New Orleans • New York City • Norfolk • Oklahoma City • Omaha • Peoria • St. Louis Salina • Salt Lake City • San Francisco • Seattle • Wichita

NEPTUNE, Inc.— Package Testers

(*A Report from Auckland, N. Z.*)

How it began we'll never know. Was the package dropped by a soldier leaping from a sinking transport? . . . or did someone lose a case of rations overboard? . . . was there an explosion of a shell or bomb? Was it stark tragedy or only that some soldier didn't like coffee?

Anyway, the little package of soluble coffee washed ashore near Auckland, New Zealand, more than two thousand miles south of the nearest fighting, to be picked up by a beach-strolling couple. They took it home to find the contents

★ *in perfect condition . . . although it must have been in the water for a considerable time*

They used the contents as directed on the wrapper and pronounced the result

★ *delicious and something entirely new to us*

That package, designed and made by Dobeckmun, had survived the hazards of storage, handling, shipping, and finally a terrific sea-going test—to deliver its delicate cargo "in perfect condition".

Dobeckmun ENGINEERED PACKAGING is serving in the war in many different ways, from rations to gas masks—from powdered soup to nuts for mobile equipment.

IT'S TIME TO PLAN

After Victory there will be new and old products seeking new and old markets. They will need new and better *protective and attractive* packages, wrappings and dressings. They can be made ready for postwar competition by starting their ENGINEERED PACKAGING plans now.

Subject only to Uncle Sam's requirements, Dobeckmun engineers can begin work on your packaging problems at once and it's not too soon to discuss them.

We'll be glad to hear from you.

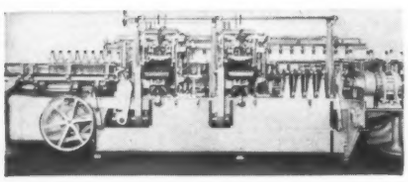
★ Excerpts from voluntary letter reporting this incident. Photostatic copy on request.

THE WINNER! Standard for Emergency Rations—aluminum foil (.001 inch) coated one side with thermal plastic for hermetically heat-sealing all edges; the other side laminated with printed cellulose acetate. It is impervious to light and moisture.

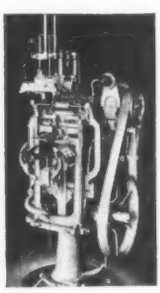
THE DOBECKMUN COMPANY

CLEVELAND, OHIO · OAKLAND, CAL

YOU'RE *Out*, POP!



WORLD Automatic BEE-LINE Straight-away Labelers apply front or front and back labels, also neck labels to all kinds and sizes of food, condiment, wine, liquor, drug and cosmetic containers. Ideal for the modern light weight glass.



WORLD Model S Semi-Automatic Labelers apply front, back, body, neck or all around labels to every size and shape of container from samples to gallons.

Father Time is going down swinging, wherever *WORLD Automatic and Semi-Automatic Labelers* are in the box for big league packers in glass. They stay in there pitching day in and day out. They have what it takes to meet the tough line-up of today. They are piling up an amazingly fine record of winning performances all along the line.

This booklet will help you fan Father Time. It's chock full of useful, practical information on labeler care and maintenance. It's yours for the asking.

WORLD LABELERS

ECONOMIC MACHINERY COMPANY

Builders of World Automatic and Semi-Automatic Labelers for Every Purpose

Worcester, Massachusetts

NEW YORK PHILADELPHIA PITTSBURGH CHICAGO SAN FRANCISCO DENVER LOUISVILLE
SALT LAKE CITY EL PASO SEATTLE PORTLAND LONDON MONTREAL TORONTO WINNIPEG
SPOKANE VANCOUVER SYDNEY, AUSTRALIA WELLINGTON, N. Z. SAN JUAN, P. R.

Boudoir or Beach!

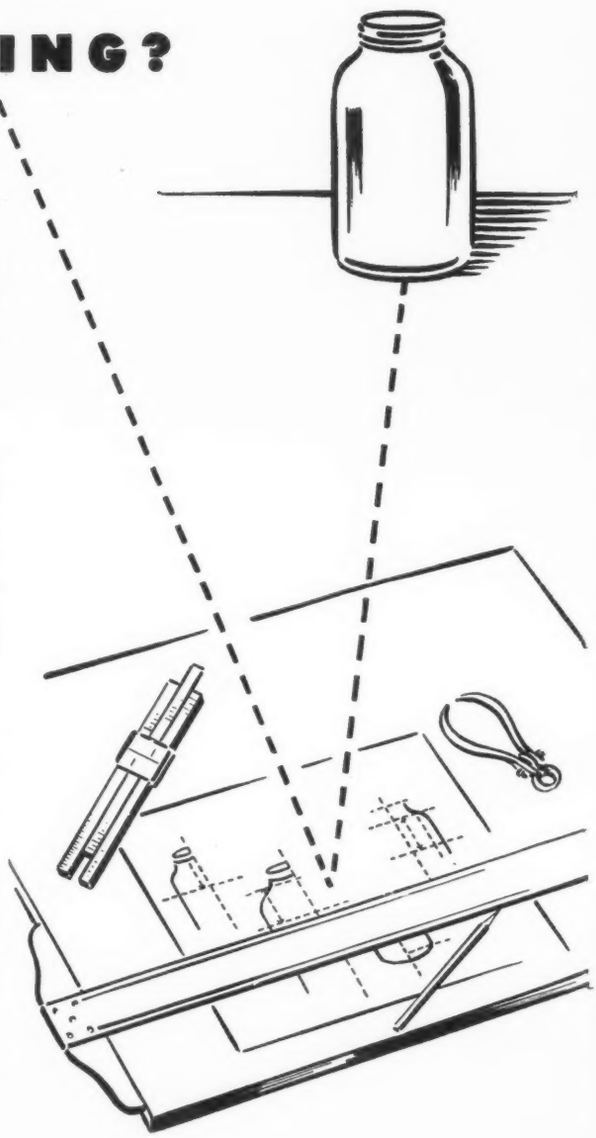
. . . you'll see fine products packaged in gleaming, graceful Maryland Glass. Yet, attractive as are the Maryland Glass designs created in pre-war days, they will be followed by even finer "designs for selling" after Victory has been won. In planning your attack on the post-war market, consider the many sales advantages of eye-catching Maryland glass bottles and jars.

MARYLAND GLASS CORPORATION, BALTIMORE, MD. . . New York: 270 Broadway. . Chicago: Berman Bros., 1501 S. Laflin St. . . St. Louis: H. A. Baumstark, 4030 Chouteau Ave. . Memphis: S. Walter Scott, 435 S. Front St. . . . Kansas City, Mo.: Aller Todd, 1224 Union Ave. . Cincinnati: J. E. McLaughlin, 401 Lock St. . . San Francisco: Owens-Illinois Pacific Coast Co.

MARYLAND

Bottles and Jars

DID YOU EVER SEE AN IDEA WORKING?



You would if you were to visit our plant. Throughout our entire organization you would see one dominant idea hard at work . . . the idea that no matter how trivial an operation may seem, it is nevertheless mighty important!

Only a steadfast adherence to the idea that there are no unimportant details—no substitutes for accuracy—no better way to approach perfection than to be precise—can you manufacture glass containers of such distinctive quality that they serve to focus full attention upon *the products* they enclose . . . at all times and under all conditions!

So, the answer to, "DID YOU EVER SEE AN IDEA WORKING?" is: "Of course!" That's all you ever do see, really, because it's the *idea* that generates the action.

For a detailed description of the way in which our working ideas can benefit you in the development of glass containers for drugs, cosmetics, household or food products, we invite your inquiries.

CARR-LOWREY GLASS CO.

Factory and Main Office: BALTIMORE, MD.
New York Office: 500 Fifth Avenue
Chicago Office: 1502 Merchandise Mart

THIS PROBLEM'S WRAPPED UP *in Aluminum*

This three-piece Alseco Aluminum Seal was specially developed in 1937 for intravenous solutions, to solve the many technical problems involved in sealing and dispensing these products . . . The value of this aluminum seal is seen in the fact that the government has approved its continued use.

TAILOR-MADE

ALSECO SEALS

Trade Mark Reg ALSECO SEALS U. S. Pat. Off.

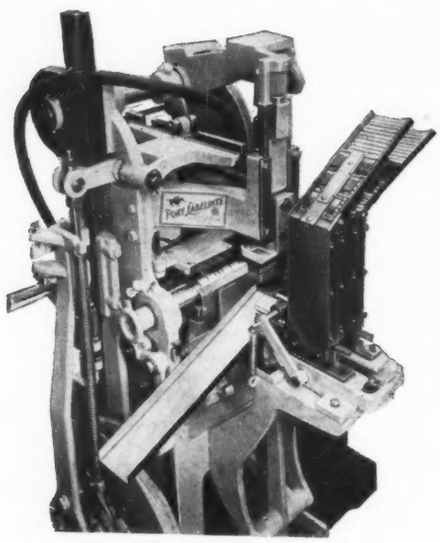
ALUMINUM SEAL COMPANY • 1345 THIRD AVENUE • NEW KENSINGTON • PENNSYLVANIA
At your service: 29 years of experience building quality seals and sealing machines

DOUBLE *the* CAPACITY *of your present* PONY LABELRITE *on VIAL-TYPE CONTAINERS!*

. . . and make your Labeling FULLY AUTOMATIC

with the Dual Hopper 2-at-a-time attachment

another War-Time development to step-up production with less cost of operation



Ideal for vial-type products essential to war needs

Is your Pony Labelrite hard-pressed for full capacity production on items used for Armed Forces or Health requisites?

The attachments shown in the illustration make Pony Labelrites, fully automatic and permit labeling two-at-a-time, feeding vial shaped containers from dual-hoppers, to two-at-a-time vial-supports. These two attachments, *and* twin label-hoppers with twin suction mouthpieces will speed up production, and release a full time attendant, for duty elsewhere.

Keep Your Eye on "New Jersey" Labelrite Developments . . .

You'll want Labelrites *more than ever* just as soon as conditions permit resumption of plant improvement . . . perhaps it would be well to call one of our engineers to give you advance information on some of the features which will save you money in labeling foods, drugs and many other products.

NEW JERSEY MACHINE CORPORATION

1600 Willow Avenue . . . . . Hoboken, N. J.

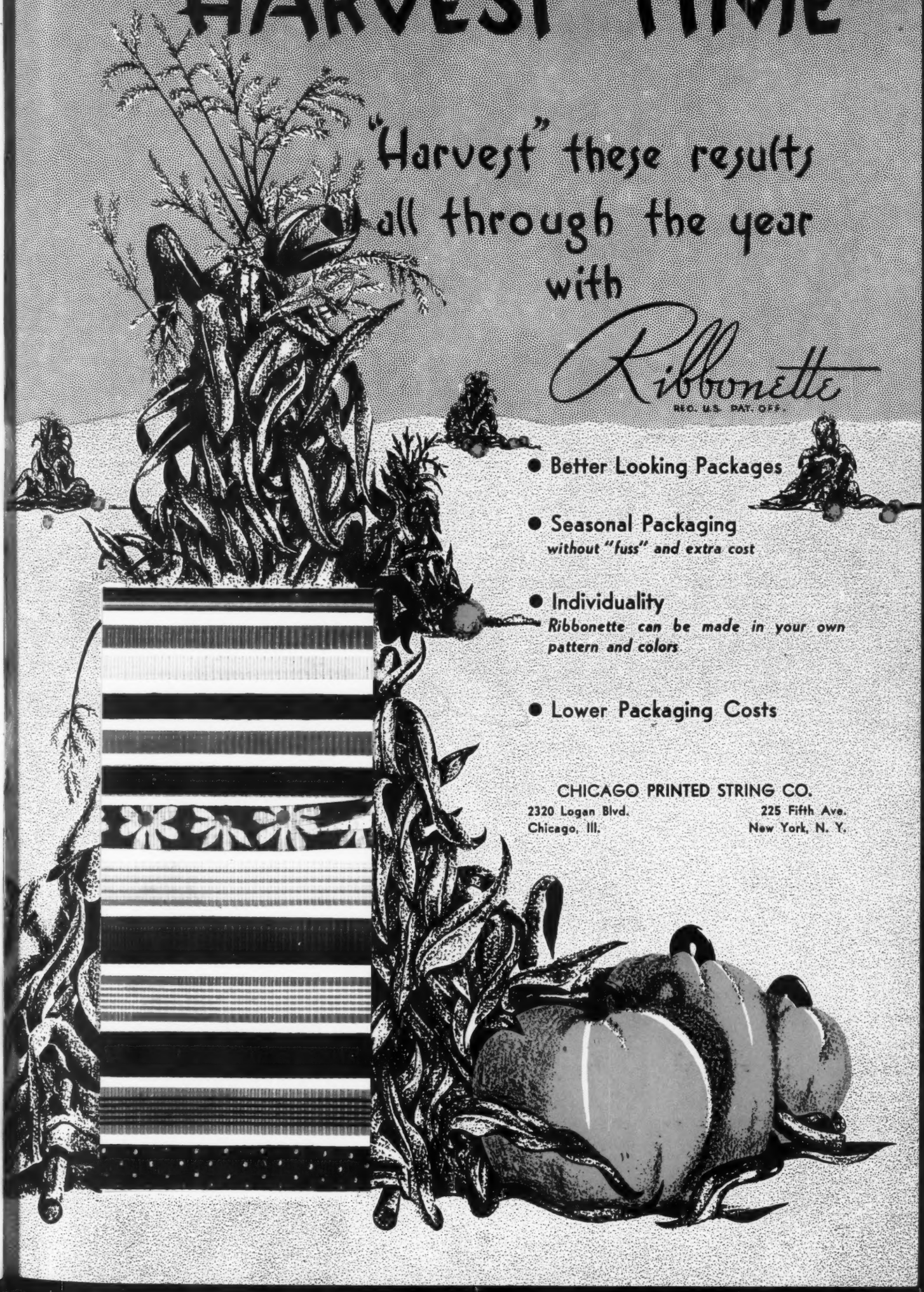
Chicago Office: 325 W. Huron Street

HARVEST TIME

"Harvest" these results all through the year with

Ribbonette

REG. U.S. PAT. OFF.



- Better Looking Packages
- Seasonal Packaging
  without "fuss" and extra cost
- Individuality
  Ribbonette can be made in your own pattern and colors
- Lower Packaging Costs

CHICAGO PRINTED STRING CO.

2320 Logan Blvd.
Chicago, Ill.

225 Fifth Ave.
New York, N. Y.

Your Bond Selling Responsibilities Double!

Starting September 9th, your Government will conduct the greatest drive for dollars from individuals in the history of the world—the 3rd War Loan.

This money, to finance the invasion phase of the war, must come in large part from individuals on payrolls.

Right here's where YOUR bond selling responsibilities DOUBLE!

For this extra money must be raised *in addition* to keeping the already established Pay Roll Allotment Plan steadily climbing. At the same time, every individual on Pay Roll Allotment must be urged to dig deep into his pocket to buy *extra* bonds, in order to play his full part in the 3rd War Loan.

Your now *doubled duties* call for these two steps:

1. If you are in charge of your Pay Roll Plan, check up on it at once—or see that whoever is in charge, does so. See that it is hitting on all cylinders—*and keep it climbing!* Sharply increased Pay Roll percentages are the best warranty of sufficient post war purchasing power to keep the nation's plants (*and yours*) busy.

2. In the 3rd War Loan, every individual on the Pay Roll Plan will be asked to put an *extra two weeks salary* into War Bonds—over and above his regular allotment. Appoint yourself as one of the salesmen—and see that this sales force has every opportunity to do a real selling job. The sale of these *extra* bonds cuts the inflationary gap and builds added post-war purchasing power.

Financing this war is a tremendous task—but 130,000,000 Americans are going to see it through 100%! This is their own best *individual* opportunity to share in winning the war. The more frequently and more intelligently this sales story is told, the better the average citizen can be made to understand the wisdom of turning every available loose dollar into the finest and safest investment in the world—United States War Bonds.

★ ★ ★

BACK THE ATTACK *With War Bonds!*

This space is a contribution to victory today and sound business tomorrow by Modern Packaging.

YOU CAN GIVE A BOTTLE "CRAMPS"

Yes THERE'S A DIFFERENCE IN GLASS

AN overheated swimmer runs the risk of "cramps" every time he plunges into cold water. Glassware, too, gets "cramps" when subjected to quick temperature changes. Technical men call it "thermal shock." All commercial glassware is subject to it—but some ware resists it better than others.

Resistance to thermal shock is vitally important to those glass users whose processing involves wide temperature differentials. But even if you aren't in that class, the fact that glass varies greatly in its ability to withstand thermal shock is important to you because it proves a point—the point that all glass is *not* the same.

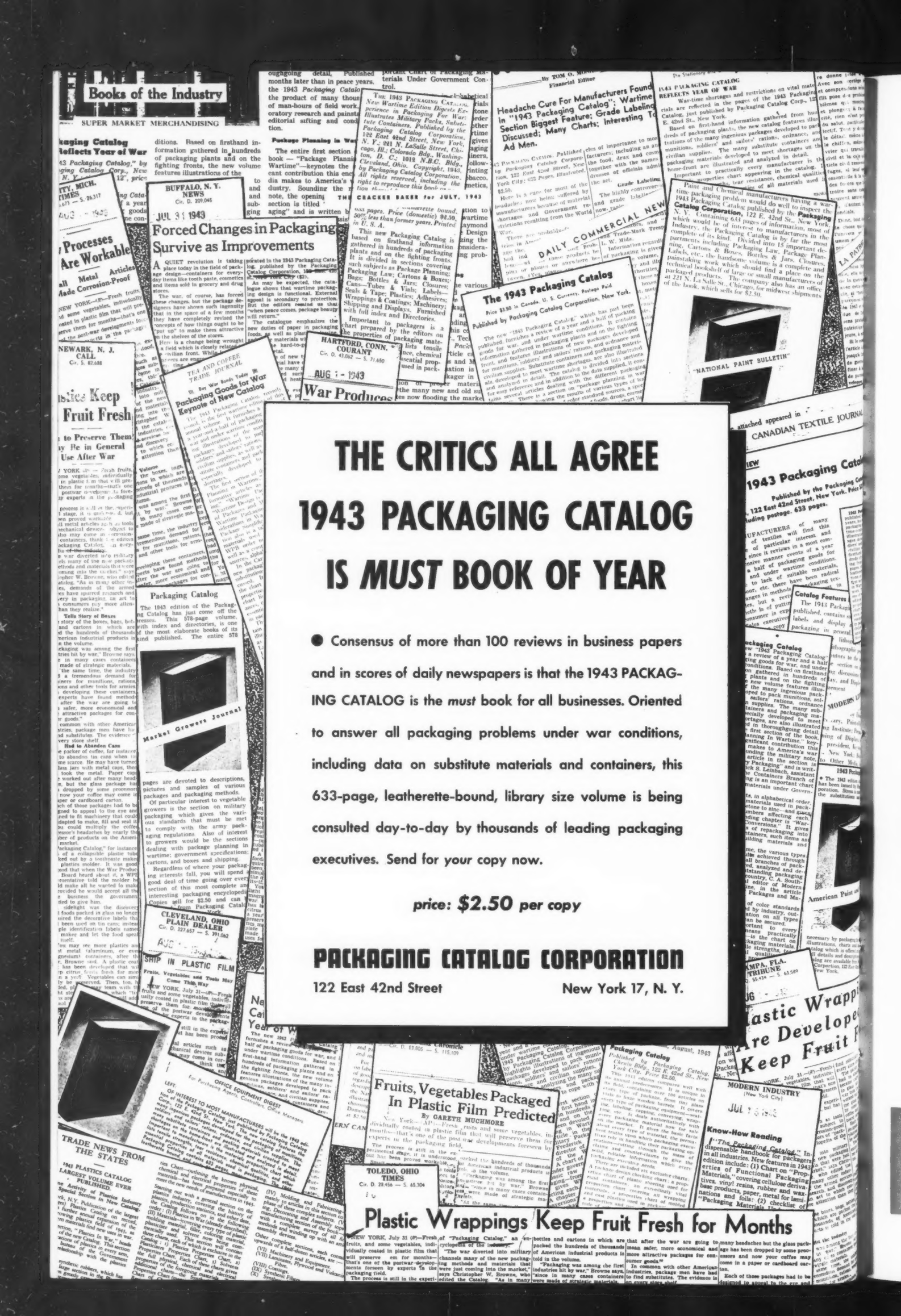
The difference between ordinary glass and top-quality glass does not lie in any single characteristic, but rather in a combination of many things—composition, brilliance, thermal shock resistance, and so on.

On the specific point of thermal shock, we believe you will find Armstrong's Glass somewhat superior. But you'll find our ware even more desirable and trouble-free when you weigh all its points of extra value together. Remember, it is the *combination* of many desirable qualities, some of them small in themselves, that makes fine glassware you can depend upon.

Armstrong's new booklet, "Men and Glass," tells the story of the skill and experience that go into the making of fine glassware. Send for your free copy by writing Armstrong Cork Company, Glass and Closure Div., 5909 Prince St., Lancaster, Pa.

ARMSTRONG'S GLASS

and **ARMSTRONG'S CLOSURES**


Books of the Industry
SUPER MARKET MERCHANDISING
Forced Changes in Packaging Survive as Improvements
Packaging Goods for War Keynote of New Catalog
Headache Cure For Manufacturers Found In "1943 Packaging Catalog"; Wartime Section Biggest Feature; Grade Labeling Discussed; Many Charts; Interesting Ad Men.
THE CRITICS ALL AGREE
1943 PACKAGING CATALOG
IS MUST BOOK OF YEAR
● Consensus of more than 100 reviews in business papers and in scores of daily newspapers is that the 1943 PACKAGING CATALOG is the must book for all businesses. Oriented to answer all packaging problems under war conditions, including data on substitute materials and containers, this 633-page, leatherette-bound, library size volume is being consulted day-to-day by thousands of leading packaging executives. Send for your copy now.
price: $2.50 per copy
PACKAGING CATALOG CORPORATION
122 East 42nd Street
New York 17, N. Y.
Fruits, Vegetables Packaged In Plastic Film Predicted
Plastic Wrappings Keep Fruit Fresh for Months
1943 Packaging Catalog
Published by Packaging Catalog Corporation, New York.
Price $2.50 in Canada. U. S. Currency, Postage Paid
Packaging Catalog
Catalog Features
Know-How Reading
TRADE NEWS FROM THE STATES
1943 PLASTICS CATALOG LARGEST VOLUME EVER PUBLISHED.
OFFICE EQUIPMENT DIGEST
Market Growers Journal
CANADIAN TEXTILE JOURNAL
"NATIONAL PAINT BULLETIN"
SHIP IN PLASTIC FILM
Fruits, Vegetables and Tools May Come This Way
Tells Story of Boxes
Bad to Abandon Cans
Processes Are Workable
Metal Articles Made Corrosion-Proof
Fruit Fresh
to Preserve Them May Be in General Use After War
Packaging Catalog Reflects Year of War
BUFFALO, N. Y. NEWS
HARTFORD, CONN. COURANT
CLEVELAND, OHIO PLAIN DEALER
NEWARK, N. J. CALL
TOLEDO, OHIO TIMES
MODERN INDUSTRY
(New York City)
JUL 31 1943
AUG 1 - 1943
War Produces

THE INVISIBLE CREW

Precision Equipment by **Bendix**

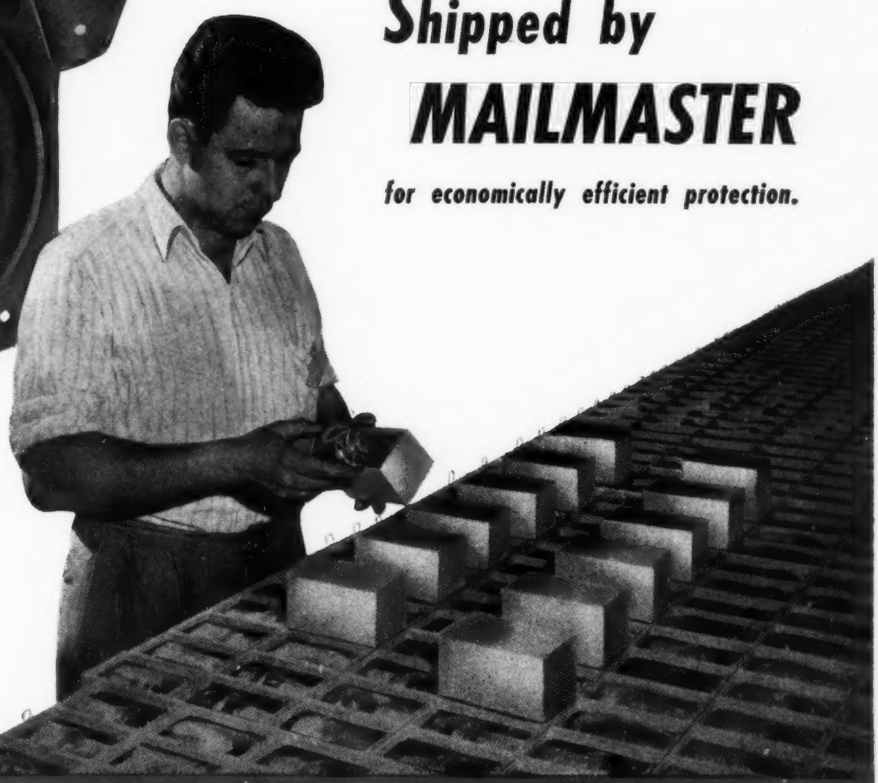
AVIATION CORPORATION

The Invisible Crew

A famous name and a famous brand protecting the airways of the world — flight companion to famous planes and famous crews. "Pioneer", "Eclipse" and other varieties of the famous Bendix precision equipment are flying on thousands of fighting aircraft and air transports of the United Nations. This famous name is being . . .

Shipped by MAILMASTER

for economically efficient protection.



Using Mailmasters at the Philadelphia Division (Photos courtesy Bendix Aviation Corporation)

The MASON BOX COMPANY

ATTLEBORO FALLS, MASS. - 175 5th AVE., NEW YORK

ACHIEVEMENT THROUGH ORGANIZATION

The three skills upon which our business is founded — *Creators, Chemists and Craftsmen* — represent nearly 100 years of progressive cooperation. As is the case today, several wars have to some degree affected the sustained progress of this organization. Against these comparatively brief interruptions, *Nashua* has continually combined science and skill and applied them to greater fields of usefulness.

Those skills are now serving under the conditions of war. But, *Nashua* is preparing them to play an even greater part in the peace which will follow.

We are converters of paper — coating, gumming, impregnating, laminating, printing, waxing. Our base material is paper of many types. We are also converters of Cellophane.

NASHUA GUMMED AND COATED PAPER COMPANY
NASHUA, N. H.

★ BUY MORE WAR BONDS ★

CARTON SALVAGE PHOTO, COURTESY THE SHERWIN-WILLIAMS CO.

The paper situation

It's getting no better fast. What efforts are being made to relieve it resemble the spectators' shouting, "Somebody get some water!" when the house is on fire.

Everybody—including all the WPB officials in Washington—knows what ought to be done, but while Rome burns there's a lot of fiddling with red tape.

First, the supply of pulp logs must be increased. This calls for more labor. The War Manpower Commission has declared pulp production essential—an empty gesture unless followed by action and accompanied by other measures. For example, OPA must authorize raising the ceiling prices so that wages for cutting pulp logs will be on a par with wages in other essential activities, classes of labor considered. The Selective Service Commission must permit labor to engage in that essential occupation without affecting draft status.

Second, priorities must be tightened even if it means more drastic allocation and the application of the principle of end use essentially. WPB, in the line of duty, has always placed war production first; but being composed mainly of business men, has always tried to dodge the problem of passing on the *degree* of essentiality, knowing full well the headaches involved. This may have to come. One tentative provision in a priority order which has not yet been issued as we go to press empowers the imposition of a reduction in allotment of raw material, for instance, as allowed to container manufacturers if the records show an improper balance between orders in process for essential war containers as compared with the volume of civilian business.

A third step is organized and systematic *practices*—not mere plans—for additional conservation, reclamation and re-use. This obviously means, among other things, that civilian packaging will have to resort to further makeshifts. Everybody knows that WPB's Containers Branch has had a plan in the making for some time. Last month, we remarked editorially that this plan hadn't emerged from running the gauntlet of Washington red tape. As this is written, that statement still holds. When that plan is announced, we urge everyone in the packaging field to give it fullest support. The Containers Branch of WPB, like the packaging field itself, is a composite of many different industries. When they unite on a project—which almost requires an Act of God—the very composition of the board is insurance that all angles have been considered. The resulting plan deserves complete cooperation.

A fourth step is a just and equitable enforcement of the restrictions as they apply to the various users of paper. This is not easy, for again one runs head-on into the principle of end use essentiality. In the field of commercial printing, it would seem that further curtailment could easily be made—it should be possible to get along without some of the direct mail matter coming from concerns who won't accept orders now anyway. In the publishing field,

however, the problem becomes tremendously complicated. Any attempt to apply the principle of end use essentiality would involve hairline decisions and produce endless complications. Nevertheless, the regulations and restrictions should be strictly enforced without discrimination. Furthermore, cuts in paper consumption should not be nullified by wholesale increases in tonnage allowances. Within the month just passed Washington released a long list naming actual publications which enjoyed increased allowances of paper, and the total reached several hundred thousand tons. When supplies for our overseas forces are being left behind because of lack of containers, it is difficult to believe these increases are warranted.

For containers, it should be obvious to everyone, are prime essentials because of the nature of the job they are doing. Packaging is performing an indispensable service for the war effort and for necessary civilian enterprise. Packaging is already getting along on far less than its usual quota of materials because one after another its principal working tools have been taken away. Paper is one of the few remaining substances it can use. In every line of business, paper packages, as substitutes for these other materials are performing vital tasks for today's urgent needs. These are overtime jobs. The only overtime pay that packaging asks is a share of the essential materials sufficient to do those jobs.

Let's get the job done!

To all sane people, war is a senseless interruption. But in a competitive economy and under a free government, certain obstructions to the speedy conduct of a war seem to be inevitable. For instance, industry finds it hard to suspend competitive practices; government agencies find it hard to coordinate their activities and to avoid confusion; the individual worker finds it easy to relax when the news is good. All of that is a part of our way of life.

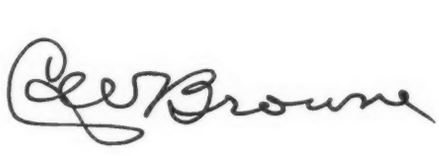
It is our firm conviction that business of its own volition and without any compulsion can do something to help remove those obstructions. We believe that the makers and users of packaging material can recognize a plain duty without the help of canned speeches by movie stars or pictures of state governors cutting pulp logs to the music of the band. We believe that a simple statement of facts is sufficient.

One important fact—obvious on a moment's reflection—is that despite the good news which continues to come from all the battlefronts, abnormal conditions are going to remain with us. Until the objectives are decisively and conclusively achieved, there must be no relaxation. *Business must not be as usual.* That realization is slowly permeating the entire business fabric. Employees trained in these routine operations, if they are still on the job, learned their duties as a result of someone's arduous teaching. New employees are broken in to the same routines. When government specifications come along, they present a forbidding and formidable new problem which in the minds of many employers is unnecessarily complicated.

As a matter of fact, those specifications are not as complicated as they look. In terms and phraseology, of course, they are dry and uninteresting, but they are by no means incomprehensible. If they differ from established practice, it is because packages must meet abnormal requirements and conditions in shipping, handling and use. Changes in the specifications are made from time to time in the light of the actual experience in the field, or because of material shortages. Frankly, we regard it as a patriotic duty to go along with the government agencies and make adaptations to these necessary changes. There must be no sacrifice in the quality of the packaging. It isn't merely a matter of delivering the shipments to the boats—the actual contents must reach their goal overseas in usable condition.

Most disturbing are the reports which come to us of container manufacturers who refuse to accept orders for government purposes on the ground that they are too busy with production for civilian needs. We do not yield to any one in championing the cause of civilian business, but we are reliably informed that there are so many of these cases as to constitute a serious problem. The most charitable construction would be to say that the offenders do not realize the seriousness of the situation; they would be deeply insulted if their patriotism were called in question, and if the government took stern measures to correct the condition many of them will be highly indignant.

The procurement agencies try to be helpful. The Quartermaster General's Office, for example, with all orders placed includes a printed slip admonishing the supplier to place his orders for packaging material far enough ahead to insure delivery of shipments as required. Even so, convoys have actually weighed anchor leaving behind materials that were sorely needed, simply because the important shipments didn't arrive at the docks in time to be included—all for lack of containers. Those results can be avoided if the Quartermaster's injunction is heeded; if container manufacturers meet their country's need by accepting orders for prompt delivery of government packaging, and if package users do their share by accepting—for the time being—below normal service and delivery on containers for civilian merchandise.



PHOTO, INTERNATIONAL PAPER CO.

Nationwide drive is on for more pulp

by R. L. Van Boskirk

WPB's big campaign for conservation of containers should be well under way by the time this magazine reaches its readers. Weeks of preparation and scores of meetings have been held—numerous publicity, marketing and professional experts have been put on the job of planning a super-duper campaign that would educate the public to the necessity of obtaining more pulp wood for boxes and making the present containers do double duty wherever possible. If advance planning, meetings, publicity and expert advice can do the job, this campaign ought to be a honey. It is worthy of note that those responsible are meticulously trying to avoid repeating the same errors that crept into the ill-fated waste paper collection campaign early in the war.

The present campaign will cover production as well as conservation. The production campaign will center around attempts to get more men into the woods to cut more logs.

Two special committees are at work on this job. One is headed by Frank Block who has been hired by the Pulpwood Consumer Industries to plumb every possible source that might aid in bringing in more pulpwood. He is the same gentleman who successfully conducted the campaign to get more scrap metal.

Another committee is headed by Walter Dear, chairman of the Newspaper Pulpwood Comm., recently appointed by the American Newspaper Publishers Assn.

Both committees are aiming their program largely at farmers in an attempt to get them to spend more days cutting wood or at least find some method for getting more logs out of the woods. Advertisements in small-town newspapers including plenty of pictures showing what wood pulp is used for in the war effort, are the principal methods being used.

Another aid to wood cutting frequently mentioned is the use of war prisoners of whom there are many thousands now in this country. Wood cutting has been a traditional task of war prisoners almost ever since the beginning of history.

OPA and the War Manpower Commission have also lent a hand by permitting higher prices and offering a special type of deferment, but it is still difficult, particularly in the South, to get labor for wood cutting when so many other industries are paying higher wages.

At the present time, according to E. F. Tomiska of WPB's Containers Branch, about 55 per cent of the total paper production is going into containers of one sort or another. Of this total about one half is virgin pulp and the other half is waste paper.

No one can tell how effective this campaign is going to be in relieving the paper shortage. It would be foolish to wait and see. So the Containers Division is going ahead with plans for conservation that will probably be far more drastic than anything attempted up to this date.

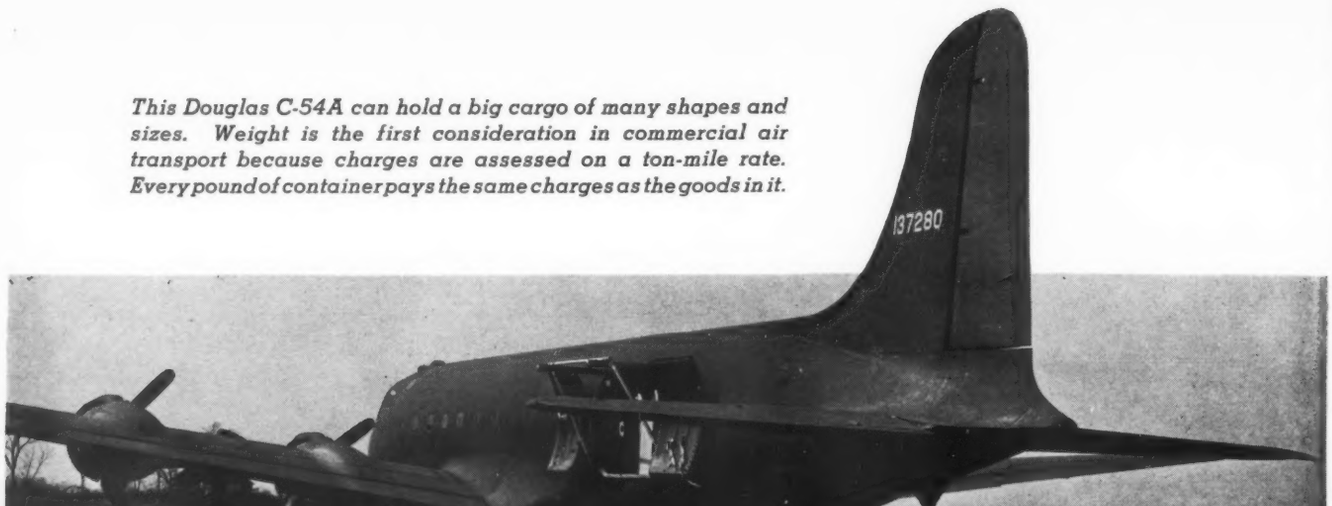
According to Mr. Tomiska several measures have already been adopted and more of the same general pattern will follow.

For example, L-239 limits the kind of paper, cuts the quantity and puts other limitations on folding and set-up boxes.

L-261 limits the material and sizes used in grocery bags.

Further orders to control more effectively corrugated and solid fibre shipping containers may be expected in the future. Insofar as actual orders are concerned, there are three prospective measures that are being considered.

For one thing, the Containers Branch is working on an amendment to M-290. It now allocates only 25 per cent of container board production—namely, the part set aside for A-boxes. The new amendment, if adopted, will provide for complete allocation if WPB chooses to go that far. It will be difficult to administer and no doubt cause many headaches. No sane man would like to take on the responsibility of deciding whether crates for eggs should have a higher priority than crates for oranges and WPB will step very carefully before it ever goes that far. It is believed that they will be more likely to allocate containers according to the priority of the goods which are to be shipped in the container, but even so, it won't be an easy task. (*Continued on page 110*)



This Douglas C-54A can hold a big cargo of many shapes and sizes. Weight is the first consideration in commercial air transport because charges are assessed on a ton-mile rate. Every pound of container pays the same charges as the goods in it.

What containers for the sky trains?

OWI's recent report on American Air Transport, telling about the millions of pounds of cargo being flown by the Air Transport Command and the $20,100,000,000 or more spent for cargo and combat planes in 1943, makes the prospects look very bright for the future of the airplane as a cargo carrier.

The efficient and economical use of the air freighter, however, depends upon several factors which have not yet received their proportional amount of attention, according to Robert Welliver, chairman of the Container and Packaging Committee of the Air Cargo Research Assn.

"Not the least of these," wrote Mr. Welliver, in the August issue of *Flying*, is the quantity of dead weight which must be hauled, useful only as a protective covering for the articles transported, at the same cost per pound, in dollars or *in terms of equipment used* as the article itself.

That dead weight means packaging. The blue sky enthusiasts for post-war air freight who get excited about the jeeps and airplane engines shipped to war zones in huge flying freight cars must remember that high cost per ton-mile is not a prime consideration in military operations, but it can be an immense deterrent in peacetime air transport.

For example, take a certain shipment of mechanical equipment weighing 75 lbs. A container in which it is shipped may weigh an additional 30 lbs. The ton-mile charge applies to the 30 lbs. of container weight as well as the 75 lbs. of weight of the machinery part. Container weight in such a case would be 40 per cent of the weight of the product.

Machinery and hardware of this type rated highest in actual pre-war air shipments, according to traffic experts, and furnishes one of the most profitable sources of revenue. Therefore, airlines and air express agencies will be most interested in furthering this kind of business. That is one of the reasons they are taking the lead now in the search for light weight shipping materials.

Weight is the first consideration in commercial air transport because charges are assessed on a ton-mile rate and every pound of weight of a container pays the same charges as that applied to the goods in it. Dimensions of the article to be loaded only become important when they exceed the largest opening of the cargo compartment.

Because air cargo is hand loaded, usually by experienced personnel and because it usually requires fewer handlings from the point of embarkation to destination, it is often possible to use many of the light weight packing materials for this purpose. This is one of the reasons for the wide use of corrugated and solid fibre containers for this purpose. Some experts are even of the opinion that for many shipments even the light weight corrugated material .009 pt. B flute 300 Mullen test board can be used safely for plane shipments. Flexible corrugated may be used as a wrapping for surfaces of articles well able to make a trip without other covering and as an interior packing to absorb shock.

Packers of articles for air cargo in the future should also follow closely the developments of wet strength treatment for paper, such as the resinous compounds including melamine described elsewhere in this issue. This will be of value because if wet strength imparts greater toughness to paper and increases fold endurance, it should make possible the use of paper materials of lighter weight.

Plywood, after the war, will have an important place among materials for air shipments, because it is light weight and strong. Last month Modern Packaging described a new plywood box developed for smokeless powder.[1] After the war, when such a container is no longer needed for explosives, it should have many uses for air cargo. This box is one-third lighter than its metal predecessor and takes up one-third less space, yet it holds the same capacity. It may be slightly more expensive than other materials, but such expense would undoubtedly be offset by the reduced air freight charges because of reduced weight.

Shippers of air freight must also take into consideration concentrated weight capacities of maximum floor loads particularly in loading heavy machinery, to protect the floor of the plane from too great concentrated weight. Maximum floor load for airliners that fly Air Express today accommodate packages that range from 40 lbs. per sq. ft. on a certain few planes up to 100 lbs. on others. A box with a base 27 in. by 16 in. occupying a floor space of 432 sq. in. or 3 sq. feet, for instance, could weigh 300 lbs. without exceeding limitations. Shipments heavier than the maximum can often be taken, if provided with a base larger than the box to enable the load to be distributed over a wider area.

As was stated previously, size of the package is not a primary factor yet in commercial shipments today certain limitations are imposed by the use of existing planes used for this traffic. None of the huge cargo liners nor converted bombers is in use for domestic service. Thus, commercial shipments are restricted in dimension by the size of the cargo compartment. While no rigid specification can be given, Air Express recommends following as closely as possible for the present—maximum depth of $18\frac{1}{2}$ in.; width, 44 in.; length varying from 35 in. on a few air liners up to $49\frac{1}{2}$ in. on the majority. Also many items otherwise too large, can be made suitable for air shipment by breaking them up into smaller units whenever possible. "If you do have a package larger than the size given," they state, "the chances are it can be accommodated in the cabin of the plane, depending on the number of passengers." For shipments by military air carriers, dimensions should be limited to sizes determined by charts furnished with packaging specifications.

Every advantage, too, should be taken to use any inherent strength of the article packed. Only in this way, it is said, can tare weight be reduced to a minimum. Such items as airplane landing gear parts can be wrapped in felt, flexible corrugated paper or cellulose wadding.

For example, an airplane landing gear truss, sufficiently strong to withstand all the stresses set up by a 13-ton airplane weighs 68 lbs. Dimensions of a crate to house it for rail shipment would be 15 in. by 39 in. by 51 in. and the tare weight 63 lbs. or 48 per cent of gross weight.

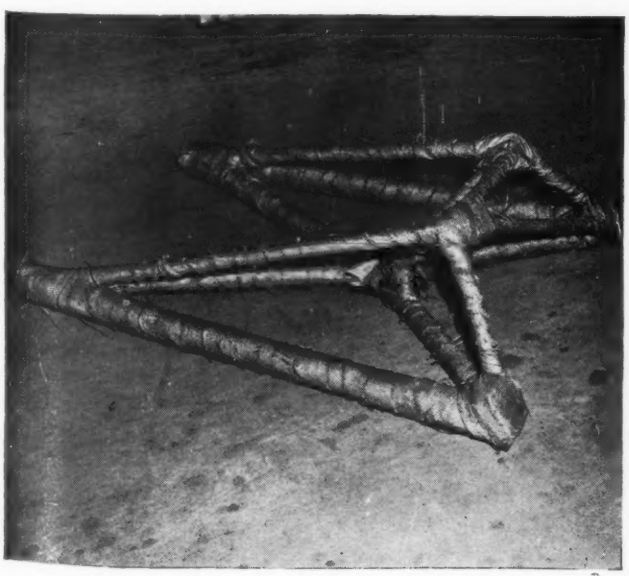
The same part, packed for air shipment, with all machined fittings, greased, wrapped in wax paper and then in $\frac{1}{2}$-in. felt and the entire truss spiral wrapped with 5-in. wide burlap strip in a manner to assure a double layout of burlap over all surfaces to prevent abrasion, has a tare weight of 5 lbs. or 6.85 per cent of gross weight. This technique is for domestic shipment only and would not apply where rail and truck shipment would be necessary for part of the trip.

Since air cargo is an express service of three-miles a minute or more—speed is of the essence and packages must be designed for efficient and speedy handling to expedite such service. A new point of view on this phase was suggested at a meeting of the Society of Automotive Engineers last March in a paper, "Engineering Problems Associated with Air Cargo Transportation," prepared by R. D. Kelly and W. W. Davies of United Air Lines.

They said that to date most thought related to the problem of fitting the package to the plane. Their suggestion was a "standard package" to aid in orderly sorting and handling.

"If a basic standard package size of, say, 6 ft. by 6 ft. by 6 ft. could be established," they said, "then other packages de-

Below. This airplane landing gear truss, prepared for domestic air shipment, is wrapped in wax paper, felt and a double layer of burlap. Tare weight of a crate to house it for rail shipment would be 63 lbs. Packing materials shown in illustration have tare weight of 5 lbs. Right. Waterproof fibreboard and gummed tape are used as light-weight packing for this auxiliary fuel tank.



Flowers packed in cellophane bags, examined with a thermo-couple indicator, were undamaged by pressures at 25,000 feet altitude, but variations of air pressure caused an expansion and collapse of the heat sealed cellophane envelopes. This was overcome by venting the cellophane. In the photo, left to right: Dr. W. T. Pentzer, U. S. Dept. of Agriculture; G. M. Dallas, Railway Express; and Edgar McClellan, florist, who conducted experiments.

signed in multiples of these dimensions, it would be much easier for the airplane designer to set up efficient compartments (freight storage b'ns in the plane's interior).

"In this way, the job of the cargo handler would be much simplified, because he would know exactly how to load the material into his bins. If such a scheme would meet with approval, it would seem reasonable that the airlines and the express companies should decide upon a number of sizes of standard packages which would be multiples of the basic dimensions selected.

"Specifications should be written to cover the type of materials to be used in such packages and to give other packing instructions. It would seem advisable to encourage the use of such standard packages by placing a premium upon the carriage of shipments which were not carried in a standard, approved package. The standard package, if adopted, would have an important bearing upon the design of the cargo airplane."

As can be seen, this is somewhat visionary. It might be difficult to standardize the shapes and sizes of containers for the varied types of goods which will move. However, it provides a new starting point in designing the plane to suit the cargo, rather than the other way around. This may start a whole new line of thinking while all of this planning is still in the development stage.

Along the same line, it would appear that now would be a good time to think about standardizing hold-down equipment in cargo planes along with its packages designed to meet the requirements of such hold-down equipment. Cargo must be held absolutely secure in a plane, because shifting can spell disaster. This is much more essential than for any type of surface transportation, including a ship, because a plane flies at practically every angle.

Some standardized planning for this whole problem could save much time in loading and re-loading. A parallel of such standardization in an entirely different field might be cited. In the early days of the electric lighting industry, Thomas Edison specified that all light bulbs and screw sockets should be standardized. As a result, today you can buy a lamp bulb and put it into any socket. The same could be true of packages designed to meet the requirements of standardized hold-down equipment in cargo planes. Now is the time to do it, when such traffic is still a-borning.

In the pre-war period, the types of commodities carried by air cargo in order of their importance were as follows: machinery and hardware, printed matter, store merchandise, motion picture film, electrotypes and matrices, cut flowers, valuables, miscellaneous news photos, drugs, transcription records and radio parts, freight manifests, jewelry, food and raw samples, optical goods and cameras, personal luggage and liquor.

Many of these items are still moving, but some have had to give up their space for war materials on high priorities. The latter requires packaging protection for air transport which would not be considered important in peace time.

Prevention of corrosion, for instance, is not usually a problem of air shipment in normal times, because the articles shipped do not stay in the "bins" long enough to corrode. In a few hours or overnight they have reached their destination. Today, however, the situation is different. Many times aircraft parts and other vital material are packaged before delivery to the military services, who may store them for long periods before they reach final destination. Hence the conditions are no different from other machinery parts shipped to withstand every possible climate or handling. Thus, in many instances, the various methods of packaging for corrosion prevention specified by the Army and Navy should be followed carefully.[2]

Also it should be remembered, according to Mr. Welliver in *Flying*, that practically all padding materials available absorb water. Therefore, any item subject to rust or corrosive action should be protected from moisture absorbed by the padding by a sheet of non-abrasive waterproof material of sufficient toughness to withstand the pressure caused by weight of the item and the rubbing caused by vibration, handling or shifting in transit. Wax paper and cellophane he recommends for this application because the latter is less subject to moisture penetration. Both materials, he said, are sufficiently non-abrasive to be used against finely machined surfaces. Shippers should also not use a sheet or pad incorporating materials that may cause a chemical action resulting in damage to the item packed.

Heat-sealed cellophane bags are recommended for domestic shipment of small metal parts. Moisture and dust are kept out to a large degree. If the packers are required to wear gloves to prevent perspiration deposits on finished parts the normal light coating of oil which is left on the parts after manufacture is enough to prevent corrosion for a reasonable period. This packing prevents drying and gumming of the fluid used in hydraulic cylinders and oleo struts to keep the packing pliable and it also eliminates tampering since the inspector's stamp is placed on the heat seal.

Air shipments going overseas should be prepared with the same waterproof, temperature and greaseproof protection, depending on specific requirements, as shipments going by surface transportation, because they have to undergo the same treatment while on the ground.

Not too much is known as yet about the effect of stratosphere flying on packaging materials, such as atmospheric

pressure, say, at 25,000 feet and sub-zero temperatures or temperature control and supercharging of cargo compartments. Study of such factors was just begun when the war cut off such work for civilian commerce. The Air Transport Command, however, will have learned many things which will be made known when the war is over.

Some cargoes, such as food stuffs, cut flowers, live animals, must be protected against freezing, while other items must be kept cool for preservation. Cargoes may freeze when the plane is flying high in low temperatures and become overheated on the ground or at low altitudes in hot climates.

Most of the experiments prior to the war in this field were for temperature and pressure effects on packaged, cut flowers. C. G. Peterson, chief engineer, Railway Express Agency, Inc., described the results of these tests in detail in a paper read before the Society of Automotive Engineers air cargo meeting last December.

Beginning in 1936, a series of tests to determine the effect of low temperatures was made with what were called a "dry pack" and a "wet pack." The former was based on the principle of insulation and included interior packings around flowers of dry cotton batting, balsam wood, newspapers, aluminum foil, shredded newspapers and moss. The other included wrappings around the flowers of wet newspapers and cotton absorbed with water. It was discovered that flowers packed by the wet pack method came through with little freezing, while those dry packed were usually rendered useless. The reason for the success of the wet pack, briefly, was based on the theory that the latent heat in the water is liberated during freezing and is conserved by the outside insulation and thus provides a longer source of heat to keep contents of the package from freezing.[3]

Both test flights and laboratory studies proved that there was no damaging effect on flowers in boxes at 25,000 feet. It was noted, however, that when heat-sealed cellophane wrapping was used on the flowers, the variations of air pressure caused an expansion and collapse of the cellophane envelopes. This was overcome by venting the cellophane. However, if heat-sealed cellophane envelopes collapse or expand at high altitudes, it would appear that there is a place for study of this subject with not only cellophane, but other types of flexible packaging films to be used in air shipments.[4]

To protect perishables from overheating in planes requires refrigeration the same as for surface transportation. Packaging materials must, therefore, perform the same moisture protection during transit. It is believed, however, planes can take advantage of natural cooling, without mechanical refrigeration, by opening the vents when the planes are flying at high altitudes. Here again, compartments so cooled would be subject to high pressure and, therefore, study of the effect of pressure as well as low temperatures on packaging is very important.

A test shipment of fresh meat, for example, was once shipped from California to Hawaii. The only refrigeration was the low temperature provided by opening the vents of the plane. The meat moved so fast from packing house into the stratosphere and out of it again on arrival, that no further protection, other than proper packaging for sanitary reasons was required. Such shipment in the air freighters of the future might save the installation of costly refrigeration equipment on surface ships or the bulky, awkward handling of live beef and pork on steamships—one of the common methods now employed for getting fresh meat to insular locations where it cannot be feasibly raised.

The vast development of dehydrated foods and the packaging thereof is also being studied from the standpoint of a specialized field for air transportation. Because of the large quantities of food which can be shipped in dehydrated or compressed state to save weight and space, the air carriers and the government's Bureau of Domestic and Foreign Commerce are making a detailed analysis of this subject.

Dehydrated vegetables take from one-third to one-sixth the freight space and weight required for similar products processed in other forms. Dr. Josue de Castro, director of food and nutrition service for the Brazilian Coordinator of Economic Mobilization on a recent trip to Washington to study food dehydration processes for adoption in South America stated:

"Not long ago we made an experimental shipment of dehydrated meat from Motto Grosso, a cattle producing country. The equivalent of 200 cattle was carried in one small plane. The 200 cattle provided 5 tons of dehydrated meat which fitted perfectly in a small place. The weight of the 200 cattle alive was about 40 tons or enough to cover an airfield."

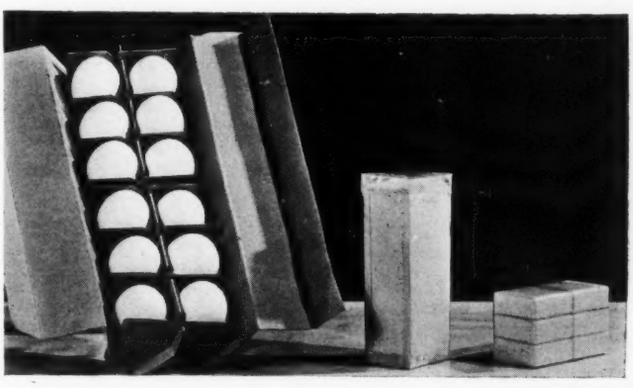
It is apparent that such light-weight and small-space shipments of food stuffs by airplane would be especially advantageous in mountainous areas inaccessible by other means of transportation, as well as to locations where certain foods are difficult to obtain due to unfavorable growing conditions.

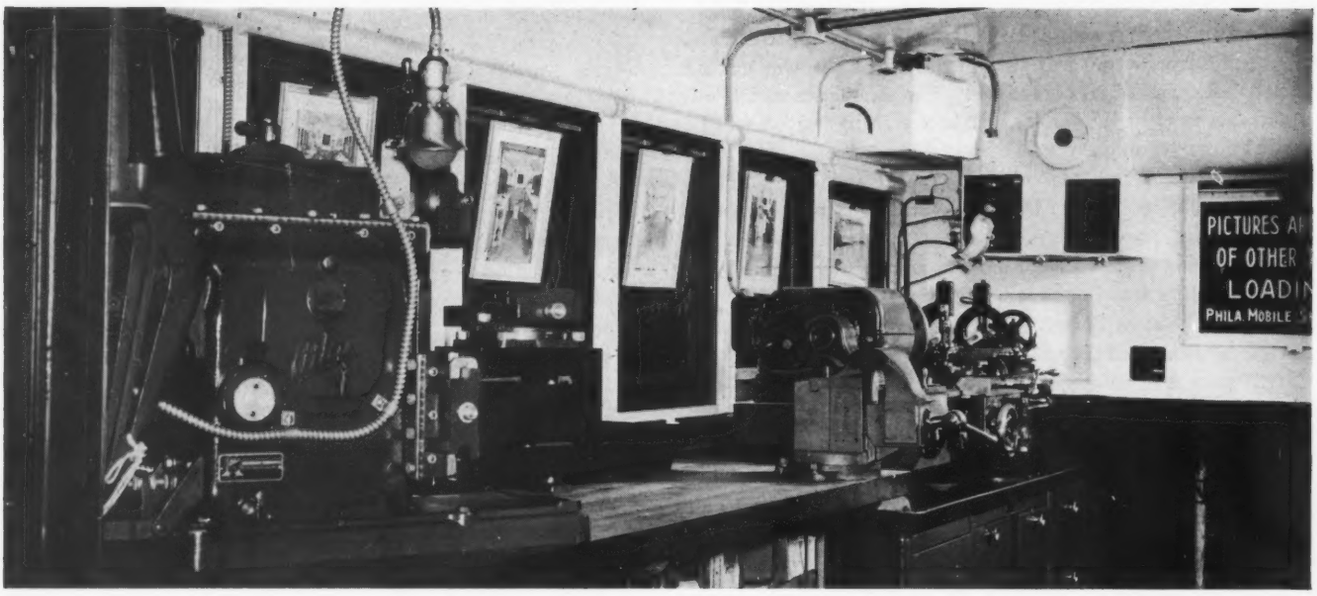
Railway Express has also made tests of the effect of the change of altitudes on cans with various types of covers. "Twenty-eight cans from a pint to a gallon in size were tested," Mr. Peterson's paper stated. "Some were $^{7}/_{8}$ full of water; some, $^{3}/_{4}$ full. All cans, particularly those that were $^{7}/_{8}$ full, showed a pronounced bulge at 5,000 ft. elevation. The bulge increased greatly with the rate of climb and at 5,000 ft. maximum expansion appeared to be reached. Screw top cans, pressure top, and single and double friction tops were tested. With the exception of the single friction top cans, all other types of closures were transported without undue risks when filled and properly closed. From 10,500 ft. up, all single friction top cans showed evidence of leakage."

Acids, inflammables and explosives are taboo for commercial air transport. Lacquers, paints and varnishes, too, when their flash point is less than 20 deg. F. This is because the airline cannot afford to carry in a container anything that might endanger ship, crew, passengers or cargo. Any shipment which contains magnetic materials must be clearly labelled, so that it can be placed in rear compartments of planes to avoid any effect on the pilot's instruments up forward.

(*Continued on page 116*)

Relative bulk of the same quantity of fresh, dehydrated and compressed dehydrated eggs. Weight and space saving advantages of dehydrated foods are being studied as a specialized field for air transportation.





Twenty-two thousand pound package

Philadelphia's huge Municipal Auditorium is now an immense packaging plant. The finished package, in its final form, is a completely boxed mobile unit truck, which is the outer container for anywhere from 1,200 to 3,600 packaged items.

Under the supervision of the Ordnance Dept., Army Service Forces, the Thornton-Fuller Co. is operating the Philadelphia Mobile Shop Depot which turns out in the neighborhood of 1,200 of these complete units per month. The trucks which are six-wheel drive, with double tires on all but the front pair of wheels, are driven into the ground floor of the big Convention Hall where each receives its proper equipment, goes through rigid inspections at the hands of both Thornton-Fuller and government inspectors, rolls out at the other end of the line, then is driven away to be boxed and put on shipboard for overseas service at the rate of 40 per day—good production anywhere at any time. To the visitor, who sees these several thousand pieces of tools and equipment as they go through the protective packaging operations, the installations and the constant check-ups, the procedure assumes proportions of the miraculous.

The whole concept is just a bit breathtaking—the idea of a complete machine shop on wheels going right up to the battlefront, there to perform repair jobs on various types of equipment that need machine-shop service. Some of these trucks specialize in the repair of small arms and are complete with tools and equipment designed for that purpose. Others restore to full usefulness the fine precision instruments damaged in the field. Still others keep automotive equipment in operation; another type does the repair work on artillery, and there are also welding trucks, electrical repair trucks, ordnance maintenance trucks—once they got started they didn't stop until every conceivable variation was developed.

All of this new equipment and all of these tools must reach the front lines in perfect condition and ready to be used. But between their point of origin and the final destination, they are subjected to the hazards of a long sea voyage. As any mechanic would know, time, atmospheric conditions, humidity, seawater, all can play havoc with fine tools and render them useless. Hence the necessity for an elaborate packaging program.

First step was the precise planning characteristic of the Army Ordnance Department supplemented by the experience and background of topflight Thornton-Fuller civilian engineers. Natural results were first of all an amazing compactness, efficiency and orderliness that would make any good mechanic's eyes gleam with delight. And the mechanical units, which will utilize this equipment, organized in companies of 250 men, have plenty of such good mechanics.

Next consideration was a packaging procedure that would afford constant and complete protection for these precious tools. If any of them were found to be useless at a critical moment, it would be impossible to replace them—and there comes to mind the Medieval situation "for want of a nail . . . the kingdom was lost!"

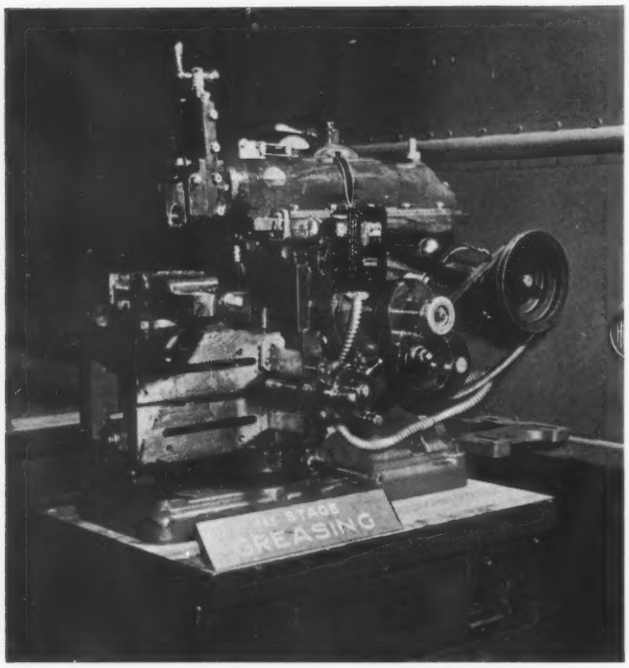
These several thousand pieces of equipment are shipped by a hundred and one different manufacturers to the Mobile Shop Depot. On arrival they are subjected to their first inspection by government and Thornton-Fuller inspectors, after which they are put into storage to be used as called for by production schedules on specific requirements for particular mobile units whose equipment they comprise. When removed from storage for installation in any truck units, all tools and machine parts are first cleaned thoroughly. This means the complete removal of any oil or grease left by the manufacturer of the part as well as any and all finger marks which are an almost sure cause of corrosion. This cleaning is accomplished by means of dipping the parts in an alkaline bath, and from then on, the parts are untouched by human hands even though they undergo a number of handlings during the packaging process. Following the alkaline bath, the parts are given a rust-preventive coating. The Ordnance Department has developed a number of different compounds

Photo above and that on the opposite page show the interior of the truck—the mobile shop depot. It is a complete machine shop on wheels which can go right up to the battlefront where men can make needed repairs to equipment damaged in the field.

each appropriate to its specialized use. These consist of various kinds of grease-base applications which are far easier to remove than the cosmoline which was such a source of annoyance in the last war. The next step is to wrap and label each part in a manner called for by that particular part, after which items are put up in packages and are ready for truck loading.

Larger units such as machine tools, lathes, drills, vises, etc., are of necessity subjected to considerable handling as they are bolted into their places on the work bench or floor of the truck. But they, too, must undergo the thorough cleaning and the protective coating just described. This is accomplished after they are in place, following which they are wrapped in wax paper, then given a final outer wrapping. These various packaging operations are done by hand and the packaging department is organized and laid out for efficiency and speed. Due to the wide variety of shapes and sizes, a mechanized package line is of course out of the question. The smaller items are wrapped by women operators seated at long benches who handle the pieces with metal tongs until the first wrapping is applied. The primary wrap is designated as Grade "A." This is a greaseproof paper, salmon-colored for quick identity and selection by operators with a heavy wax-coating on one side. Some of the parts call for the use of a Type "A" bag for greaseproof protection. This is a textile laminated to a waxed paper and coated with a

An exterior view of the 22,000 pound package. Before it is put on board ship, it is boxed for protection during the voyage.



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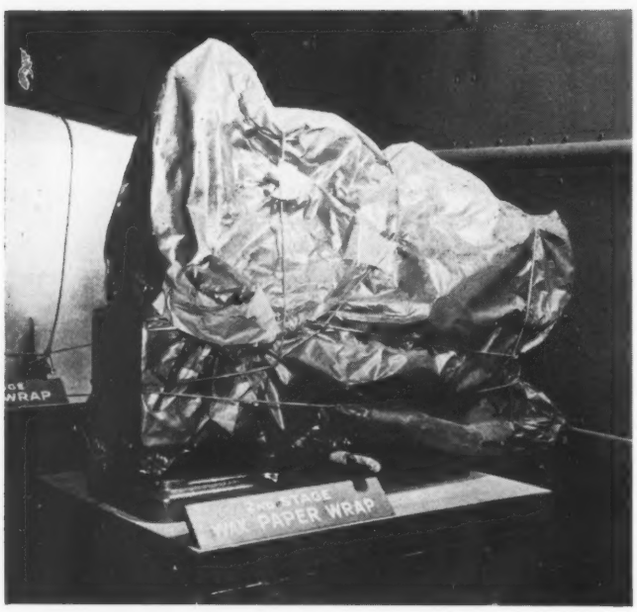

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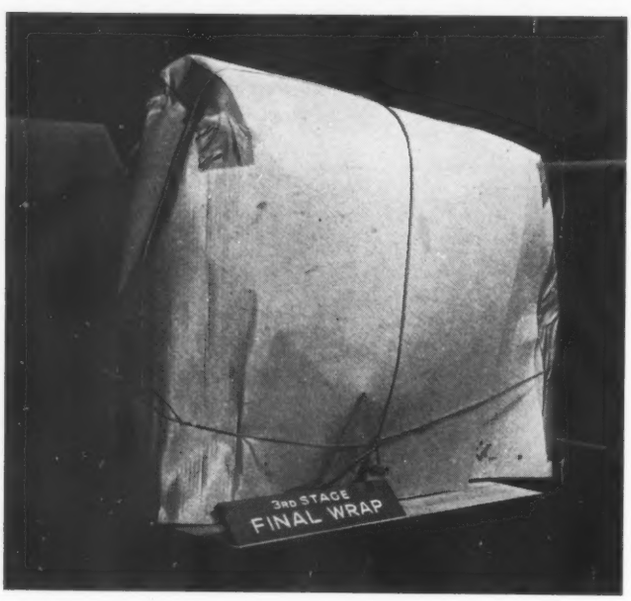

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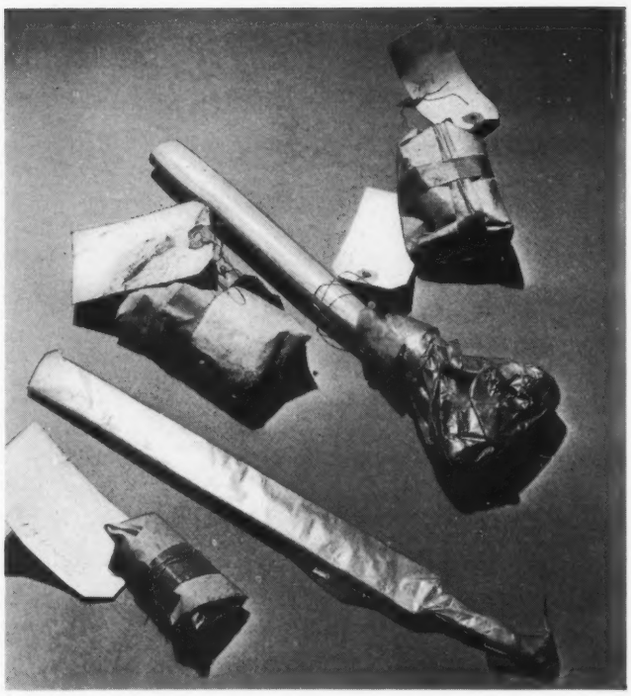


4

1, 2 and 3. These three photos illustrate the three stages of wrapping a piece of machinery. The first stage is that of greasing, but with an application that is much easier to remove than cosmoline. Second stage is that of wrapping and labeling each part in a specified manner. Third step is the application of the final outer wrap of corrugated paper. 4. A group of tools completely wrapped. Note the identifying labels which give each tool its specification number and product identity as well as the number required for the complement.

heat-sealing thermoplastic to insure proper protection.

Some types of tools, because of their shape, call for the use of a wrap which is moldable against the object being wrapped and which forms its own seal. This is provided by a type designated as Grade "C" greaseproof paper, green in color, which is wax-coated and laminated. Over either type of primary wrap, there may be used a weatherproof tape to make the seal more secure and/or a corrugated outer wrap may also be used. For instance, a finely calibrated tool like a micrometer or a depth gauge would be very carefully protected by means of a Grade "A" primary wrap plus a Grade "C" wrap with a final wrap for outer protection which consists of a single sheet of corrugated paper laminated to a double-wall kraft with an asphalt liner.

Each tool or part after the packaging operation is completed, receives its identifying label giving its specification number and product identity as well as the number required for the complement. In some instances, complete kits of tools are packaged in a tool case which, after final inspection, is sealed with the well-known wire-and-lead type of seal against tampering. The entire kit is wrapped in the corrugated-kraft-asphalt wrap and sealed with waterproof tape. Check lists and packing lists are provided to enable the front line inspection to be made quickly and efficiently. All the "props" for the shop unit are now assembled, installed each in its proper place in the truck, the whole thing is given its final inspection, the truck is sealed—and another mobile machine shop starts its journey to the front line where it will help Uncle Sam's boys to do their job better and to get back home quicker.

Rusted cans in V-boxes

Biggest stir of the month in Washington, so far as packaging is concerned, was the commotion caused when army officials discovered rust on some of the cans which were packed in V-boxes.

At this time, it is impossible to give an accurate account of what is actually happening. Conflicting statements are bandied back and forth like a shuttlecock in a hot game of badminton.

"It's bad—very bad," say the gloomiest of the gloom spreaders.

"It's only a tempest in a teapot," say those who feel it is only a minor problem that can be promptly remedied.

One fact is certain. Rust was found. How much or how widespread, no one will say. One of the controversies is over difference between the words, "rust" and "corrosion." As defined by one expert, "rust" is a comparatively harmless oxidation that would take months and, perhaps, years to eat through a can. But "corrosion" is a dangerous condition that could cause complete spoilage of the contents by eating through the can in a few weeks' time.

Cause of trouble

Some of the best informed experts say that the present trouble is definitely "corrosion" or "pitting" along the exposed edges and ridges of dents that have come in contact with the sides of V-boxes. In other cases, the corrosion can scarcely be seen, but the container feels rough and pitted when rubbed. This is considerably different from ordinary water rusting. In the opinion of these experts, it is extremely dangerous insofar as the cans affected are concerned, but as pointed out before, no one is telling how many cans have been affected.

In most instances, the corrosion developed soon after packing and while the goods were still in the canners' warehouses. The problem is now in the hands of four different groups who are making extensive tests and investigations. These groups are the Office of the Quartermaster General, Containers Division of WPB, Bureau of Standards, and representatives of V-box manufacturers.

Investigation under way

Investigation of the first corroded cans examined indicated that ammonium chloride was present. Ammonium chloride is a catalyst in the urea formaldehyde type waterproof resin used in laminating the solid fibreboard. The army has recommended its elimination which is no particular hardship, for there are several available substitutes.

Later investigations led to a belief that there may have been several causes for rust accumulation. In fact, ammonium chloride may have been only a minor contributor. Some investigators hold to the belief that other substances in the adhesives may have caused the trouble, along with unsuitable packing conditions and extreme atmospheric situations. Still another suggestion as to the source of the trouble is that possibly thinner coatings of tin used on the cans may not have been sufficient protection against corrosion.

Present evidence indicates that the corrosion was most likely to occur when:

1. Boxes were packed soon after manufacture.
2. The moisture content of the fibreboard was high.
3. There were no asphaltic barriers.
4. The non-asphalt-containing solid fibreboards have been made without the application of heat following the pasting or laminating operation.
5. Ammonium chloride has been used as the catalyzer in the urea-formaldehyde type waterproof adhesive used in laminating fibreboard.

Recommendations

However serious the situation may be, manufacturers are convinced that it can be remedied and quickly. Some of the recommendations for correction of the trouble are as follows:

Better cannery methods. Cans should be loaded into the boxes with more care and precaution taken to prevent excess moisture collection in box interiors.

Empty boxes should be opened up and aired before they are loaded.

Better ventilation in storage rooms.

Better control of moisture conditions in the paper mill where container board is made. It is recommended that the finished board contain approximately no more than 12 per cent moisture before fabricating into boxes.

Use of only asphalt liner board. It is estimated that 60 per cent of the present production of V-boxes contain asphalt liners.

Possible elimination of ammonium chloride as a catalyst.

The Quartermaster Corps has already ordered canners and depots to aerate, to the maximum extent possible, all solid fibre V-boxes on hand and to keep packed boxes with the flaps opened out until the latest possible moment before shipment. Further, all stocks of goods packed in V-boxes in warehouses and depots are to be checked at frequent intervals to note any development of corrosion so that measures may be taken at once to correct the condition.

As a sort of soothing balm to those whose nerves are frayed and who fear the worst, it might be well to give some consideration to the words of a can manufacturer who pointed out that there are millions of cans already packed in V-boxes that show no sign of rust and, furthermore, there has never been any positive proof against rust. It has been a perennial problem, but never one that caused too great anxiety, because in most cases it has been comparatively harmless. There is no intent to make light of what may well be a most serious situation and no one is inclined to deny that the present corrosion problem may be far more serious than ordinary rust, but it is also possible that the damage is comparatively light and that proposed remedial measures in this instance will put a prompt end to the present difficulty.

Patterns for package planning

In the preceding issue of Modern Packaging, the first installment of this study presented detailed notes on the package planning procedures of representative producers in six different lines of business whose products are widely sold. As was pointed out in that article, the company names were withheld by request. This, however, in no way interferes with the interest and usefulness of the information. Any package user whether in a similar or different line can check his own procedure against that of any of the various companies to see how his own plan compares. In the first installment the lines of business were:

A Pharmaceutical Manufacturer
A Manufacturer of Proprietary Remedies
A Meat Packer
A Paint Manufacturer
A Producer of Conserves and Canned Foods
A Confectionery Manufacturer

In this issue, six additional companies are presented whose products, location and distribution practices vary widely from those already given.

A manufacturer of perfumes and cosmetics

The aesthetic aspect of packaging appears nowhere to better advantage than in the cosmetic and perfumery field. This particular company, fully aware of some of the extremes in bizarre and spectacular packaging in its field, studies carefully to avoid such tendencies and to embody principles of dignity and distinction in its own packaging.

The line consists of six groups or families of products, each group consisting of such items as perfume, cologne, soap and a gift set grouped together on the basis of a particular fragrance. Four of these groups or families are in the higher-priced brackets and two are in the popular-priced bracket. The color scheme and design for each group are distinctive, but each is selected from the standpoint of its harmonization with all the other groups. Each of the six bears its own particular brand name, but the entire six members of the line are unified by means of a characteristic symbol for all. With most of the products, this takes the shape of a closure which has been the trade mark of this house for many years. Inasmuch as retail outlets are required to take on all six members of the line, this unifying trade mark has definite merchandising advantages. From the standpoint, too, of the company's advertising campaigns their packages, with the unifying trade mark closure, become an exceedingly important feature in the campaigns.

With some cosmeticians and perfumers, the policy is to bring out a new series of packages each successive year. This company, however, once a package scheme is adopted for a particular family, makes it a practice to retain that scheme for the life of the product; although, as is customary in the field, they bring out seasonal gift items. All of their packaging procedure, therefore, is conducted on a long-range basis. Consequently, decisions are arrived at as a result of concerted action on the part of a group which includes not only the top executives but also the heads of advertising, sales and purchasing departments. To an outsider, they admit, these conferences might appear as prolonged "talk-feasts," where nothing seems to be considered in an orderly manner. In reality, however, the many minute points are most carefully weighed and out of it all comes something that makes them all agree, "That is it." Then, to sum it all up in their own words, "We realize that all the conversational headaches were worth while."

As in many other industries, this one is restricted to certain kinds of materials for packaging purposes, although there is a certain latitude in the matter of shape and structure for both bottles and set-up boxes. One principle of construction is that the package must not be skimpy in appearance, but at the same time it must be dainty. One of their chief concerns is that of getting the beautiful box they want at the price they want to pay. In such matters, they say, they have found their box makers very helpful, playing an important part in the development of their packages. Sizes and prices of the various units are pretty much fixed by their own established practices. They stick pretty closely to the price brackets which their public expects from them and declare themselves not to be very much influenced by competition. If there seems to be a conflict between the element of package beauty as compared with utility, that conflict is finally resolved by executive decision.

As comparatively little of their packaging is completely mechanized, they do not make experimental runs. They do, however, make as accurate and definite a cost estimate as possible before the package material is ordered. This includes all labor costs. If a package is of such a unique character that it requires extra labor on the packaging line, the decision whether to adopt it or not is made on the basis of the probable promotional value of that package once it is placed on the market. This has been made the deciding factor in the final analysis for the adoption ot such packages.

The cosmetic industry came under rigid federal regulation when the Food, Drug and Cosmetic Act was passed in 1939; consequently, they must exercise great care that each package complies with legal requirements. They do feel, however,

that the required material on their packages can comply with the laws without marring the beauty of the design. To this they give considerable thought. The protection and the visibility of their own trade marks are likewise an important point. These trade marks are always given careful consideration in any proposed package design.

Because of the diversified points of view which are brought into consideration during package development, they feel that all angles of consumer acceptance are anticipated, so they do not make any specific tests in the field. When there is any doubt about structural stability or "shipability" of a package, it is their practice to make test shipments to see exactly how the material will ride.

A cereal company

This company leans heavily on its advertising agency in respect to package development. They have a new products department which, on the basis of field reports and competitive conditions, decides on the advisability of bringing out a new item. The actual development of the product itself is worked out in the chemist's laboratory. But before any such product is definitely launched, they look to their advertising agency for a thorough market study on the particular product and on the conclusions from this study the final decision is based.

Brand name and product name are matters which are given careful study. The company has several trade names and trade figures, both of which are known the world over. Many of their products use both in order to take full advantage of the advertising investment which those features have enjoyed over a period of years. Because of these two features, certain elements in every package design are almost automatically decided in advance. The art department of the agency assumes the responsibility for preparing the package design, but the copy is checked by advertising, sales and legal departments, so that there can be no question about the copy from these different standpoints.

Because of the nature of their products, which are mainly cereals and dried foods, they have always been able to stick more or less to paper packages. The problem of materials is put up to the purchasing department which chooses the particular kind of paper package that the nature of the product requires. Here, however, the purchasing department must first make a careful study of two things. First, the package material must be easily producible, must be within the allowable budget figure and must be available through convenient sources of supply. Second, their own production line equipment and packaging personnel must be suited to the job. From the time these decisions are reached, the matter then becomes routine procedure in the hands of the members of the purchasing department.

A producer of spices and other food products

Package planning has been simply disposed of by this company, as far as their own executives are concerned, through the easy operation of placing the whole matter in the hands of a nationally known package designer to whom Modern Packaging's interviewer was referred for fullest detail. This designer, whose work is exhibited in every food store in America, outlined his procedure thus:

Preliminary study first takes into full consideration the nature of the product, its requirements for protection, method of distribution, time of probable turnover, etc. Currently, thought is given to the company's equipment for packaging the product. Out of these two important considerations comes the decision as to what type of material should be used for the package.

When this selection has been made, the problems of shape and structure are next approached and the principal considerations here are first the producibility of the package. This particular designer, like most of the top-ranking package consultants, has a wide knowledge of production processes in package manufacture which, of course, is an important adjunct in his decisions. A second consideration is the display possibilities of the proposed package. In his lexicon, the appearance value of the package is second only to its protective function. A third consideration is comparison with competing products. Client and designer both realize that similarity or imitations of competing designs are very undesirable, so the effort is in the direction of distinctiveness and improvement, while at the same time using accepted methods and attempting to make their improvements without any increase of cost in the package.

Design, as this consultant sees it, is functional. For instance, in the case of a coffee package recently redesigned by this company, the principal objective was to utilize design in order to assist both retailer and consumer to make a quick selection of the desired grind. Of the three available methods of making this clear—that is, by means of color, pictorial or by lettering—color was selected as the most effective device and the label appears now in three different colors with the same basic design.

In striving for package individuality, this company has found its consultant's practices to be based on sound merchandising ideas. Consequently, its products make primary use of pictorial symbols or trade figures, preferably related to the product or its uses, if at all possible. These are handled in simple direct fashion, sometimes almost primitive in treatment but always quickly recognizable and therefore easily remembered by any class of consumers. A second device for acquiring individuality is characteristic or unique handling of lettering and a third method is the use of color in particularly distinctive ways.

It will be noted that this company, guided by its consultant, thus places color in third place, contrary to the philosophy insisted on by others. They feel that consumers are not color conscious to an exacting degree. In view of the present difficulty of obtaining color uniformity, this philosophy is a rather comfortable one—it allows greater latitude and results in fewer production headaches.

They have evolved some interesting principles which go very completely into the merchandising value of design, such as: dominating shelf appeal, memory value, appearance of quality and cleanliness, and design to accentuate the full size of the package. Great consideration is also given to the producibility of the design. One of the major principles is to place all important elements so that tolerance is allowed for high-speed production. Another is to distribute mandatory elements in the copy according to design principles and break them into blocks for easier reading—that is, create a design for the lettering so that the vital elements stand out. Still another is to make a virtue out of a limitation. As an example, the vacuum seal on a can containing a peanut product was decoratively treated to utilize the bump to make it appear as though the metal were embossed in the shape of a peanut.

Merchandising and mass display principles are the governing considerations in the packaging development plans of this company and they declared that they avoid endless headaches by dumping the whole problem of this part of the business on the lap of their packaging consultant.

A producer of soaps, food products, toiletries

Although the advertising and promotion department and the packaging division of the manufacturing branch of the company are responsible for package development, the call for such work might be the idea of anyone connected with the company or with their advertising agencies. However, the development of the suggestion immediately becomes the responsibility of the advertising department, the agency and the manufacturing division. In that way package fabrication and product manufacture are checked against the proposal along with design, materials and merchandising qualities of the package.

If it is a matter of changing the surface design of a predetermined packaging form and materials, the manufacturing division is only concerned with the effect that surface coverage, as printer's ink, might have on the product and its packaging. The advertising department and the advertising agencies produce by their own efforts, and sometimes with the aid of free lance designers, a number of proposed designs. The presentation of these many approaches is not due to indecision, but makes use of a thorough search for the best way in which any part of the packaging procedure can meet the test to be applied. In arriving at a design which will be approved for use, the opinions of and the research of advertising and sales, legal and production divisions, dealers and consumers are considered. Naturally such thorough study does not promote frequent or quick changes nor does such thoroughness permanently close the issue of the possible changes for "succeeding generations." A continued study of the products in the stores and in use by consumers gives rise to further changes and developments. If a package can be made more functional, that is a good reason for a change. If the design as such can be made more effective and stronger in display, that, too, is good reason for changing.

The selection of materials, structural points, functional values and such basic packaging requirements are more the responsibility of the manufacturing division than of the other groups or individuals. However, here, too, there is close harmony between the manufacturing division, the suppliers, the advertising and sales people and the research departments who are able to check dealer and consumer acceptance or criticism. Within the manufacturing division, not only does the packaging group contribute, but the engineering department, the chemical division, and the shipping division also make their contributions.

Through all these different operations, the two coordinating groups are the advertising and the manufacturing groups of organization.

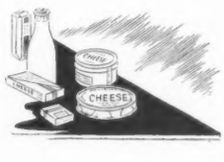
There is a planned procedure for package development which, of course, cannot be made public, yet serves as a traffic check on such projects in order that all issues may be considered and yet the job may not be lost somewhere along the line.

A finished package or product form is, when established, put into permanent records either by blueprints or specification sheets and various materials and color standards are set up with the factories all over the country so that as they are received they may be checked carefully. Control seems to be the byword on all operations from the first idea to the time when the last bit of the product is emptied out of the package by the consumer.

There is probably nothing exceptional about the complexities of such operation, but the thoroughness with which each step is carried out and the ends to which this company goes to test each phase is a testimony to their belief that packaging is a most important part of manufacturing and selling.

A producer of grocery products

This company specializes in items which require refrigeration and quick turnover though their line, which is distributed throughout the United States and foreign countries, includes many food products of a general nature.



The decision to bring out a new product is made by a "cabinet" after a market search is conducted. This cabinet is representative of the sales department, the advertising and promotion divisions and the production department and is headed by the director of sales. After the major decision is made to launch the product, this cabinet follows logically with decisions on sizes and content, selling prices and equipment required for the production line.

Now, under the direction of a special promotion man—and apparently that title is a very comprehensive one in this instance—laboratory tests are made to determine package materials and structure. These tests are quite likely to be very stringent, because many of their products in packaged form must undergo the action of heat, moisture and sterilization. The next step is that of obtaining dummy packages from suppliers to meet definite specifications drawn up by the sales cabinet. In this process, full advantage is taken of the competitive situation, that is, the various bidders called in are aware that no one has a monopoly on the business. Since the creative work is all done inside the organization, the suppliers are on an even basis as to production. At the same time a high-quality standard is maintained, cost figures are watched carefully, but this company realizes full well the wisdom of paying a premium when a stronger package seems advisable. The extra cost is more than compensated for by the reduction in damaged goods.

Meanwhile, the external design is being developed in their own organization. They cheerfully admit that their own designs may not measure up to the aesthetic standards of independent package design consultants, but they are perfectly satisfied because, when tested by sales curves, their own designs meet all requirements. They rely neither on an internal board nor on an external consumer jury—the sales figures determine whether a design of a package is to be retained or changed.

The copy which appears on the package exterior is prepared by the sales and promotion departments, then submitted to the label committee for approval. This committee has nothing whatever to say about the design, it is composed of members of the legal staff and the technical department with its chemists and dietitians who check every statement for its absolute correctness, clearness and legality. This committee also scrutinizes every label change from these standpoints.

A producer of toilet requisites

Although at the present time the principal packaging problem of this company is the availability of materials, their package planning procedure nevertheless follows the same routine as in normal times. A package problem usually originates with the sales department which makes the decision as to whether a new product would have an opportunity. The influences which govern are market considerations as well as availability.

The first step in their procedure is the development of the product itself in line with the findings of the sales department studies. When the product has reached the point where it meets their own standards, it is submitted to a "consumer jury" in several test localities, which may be either local or widespread.

How to package the product is the next question, so the sales department, the division of market research and the advertising department go into a huddle. Probably the first thought of this group is given to the question of functional design from the standpoint of consumer convenience; second is the question of external design from the point of view of appearance and sales appeal.

The recommendations of this group go to the production department. In this particular organization, the purchasing department functions as an integral part of the production department so that it is possible at this stage of package development not only to make any needed modifications, but also to determine availability of packaging materials as well as to locate sources of supply.

At the same time product and package suggestions almost invariably go to their research laboratories where tests are made as to package function and the suitability of the package materials for the particular product. Thus coordination of the various angles of package development really take place as the package goes along from one department to another.

Now occur some important tests, conducted by the production department to determine structural adequacy so as to withstand the hazards of production, shipping and handling

throughout the merchandising journey. If the package itself is likely to receive unusual handling during its life with the consumer, that point, too, is tested at this time. The company has evolved its own special methods of testing within its plant. If consumer reactions are felt to be desirable, here again the "consumer jury" is consulted. Problems of "handleability" on their own production lines were solved through conferences with the manufacturers of packaging machinery whose advice, they say, has always been sound and helpful.

Matters of design and copy are placed in the hands of the advertising and sales departments. In general, they say, they regard it as important for a design to be appropriate to the shape of the package; consequently their designs are made up with that point in mind. The copy content is prepared by these same departments but is checked for compliance with federal and state requirements by the legal staff.

This company is not satisfied to let any package ride on its own once it is launched, but makes it a practice to follow through with market tests conducted in limited test cities. These tests include a careful analysis of product and package from the standpoint of consumer acceptance of structure and design, and sometimes even goes so far as to cover the methods of marketing and advertising.

Conclusions

As one studies these twelve different companies with respect to their package planning procedure, at first blush one realizes that there is no standardized pattern. Indeed, there cannot well be, for each company must evolve its own procedure in the light of its own products—with their varying requirements as to protection—the wide differences in merchandising practices and the different types of consumers sought.

In all cases, however, there seems to be a very keen realization of the extreme importance of packaging from the standpoint of protective structure, but of equal weight are considerations of attractive appearance and consumer convenience. True, some of the companies have learned these lessons the hard way and in the difficult school of current shortages both of packaging material and of products themselves. There is manifest an indication that when the present shortage situation is cleared up, packaging will come in for a far greater share of attention than previously.

This is partly due to the increased emphasis on the protective adequacy of package materials and partly to a determination—when circumstances permit—to use the package as an important means to re-establish a brand with the public. A constant undercurrent of thought was noted in all of the interviews indicating that plans leading to these ends are already receiving careful consideration.

There is, of course, no uniformity of nomenclature as to the various functional groups within different organizations. For instance, one company has a "control group" which coordinates all activities and particularly scrutinizes legal aspects of copy. Another company may accomplish the same thing by a group designates as "the label committee." Regardless of terminology, however, it appears that without question each company has a very definite method of insuring adequate consideration of the various elements in package planning as required by its particular products.

The independent package designer, when used by a packager, performs a service of an all-around character which appears to be of far greater importance and value than the fees involved. It would appear, however, that relatively few concerns have discovered the extent to which they may rely on a well-balanced packaging consultant. The study does not reveal whether or not this may be because of an inadequate selling job on the part of the designers.

On the other hand, even the very largest companies lean heavily on their suppliers of labels, cartons, glass and metal containers as well as production equipment. In practically all instances, investigation shows that these suppliers prove to be an immense reservoir of practical help in the selection of producible materials, in the preparation of practical and economical designs and in the selection or modification of packaging machinery.

It would seem as though testing of materials, if practiced at all, is handled in a rather haphazard manner, chief reliance being placed on someone's previous experience. Perhaps this is due to the fact that there is no recognized standardization either of the objectives or the methods of testing packaging materials; but with all of the new packaging materials which have been developed during the shortage era, it is safe to conclude that the setting up of test standards will become, within a certain time, imperative. (*Continued on page 112*)

Food for babies

All infant cereal food products should be protected against the deterioration of moisture or the possibility of contamination. Lederle Laboratories, Inc., a subsidiary of American Cyanamid Co., saw to it when Cerevim, their pre-cooked cereal product, was first placed on the market that the package would afford this protection. The cereal was brought out in a round fibre container, tightly sealed. The container was made of extra heavy fibreboard so that it would stand up in shipping.

The old package was a good package, but Lederle believed it could be improved and the company is now marketing its Cerevim in a carton. It is of heavy boxboard coated with synthetic plastic which resists moisture. Thus, the need for a bag to hold the cereal is eliminated. Instead of having a wrap-around label or a tight wrap, the carton blank is complete in itself. Printing is done directly on the blank, which effects a saving of paper and of labor in applying the labels or wraps. A new design has also been made using only two colors. Buff and blue are the new colors. Two buff-colored heads of wheat take the place of the one head used in the previous design. The name "Lederle" is used in a medallion in a striped band.

Top and bottom ends of the new carton are dipped in wax to a depth of a quarter of an inch after filling in order to insure closure and sealing. There is also an easily opened pouring spout on one side.

Credit: Designed by Arthur Allen. Cartons made by Reynolds Metals Co., Richmond, Va.

DESIGN HISTORIES

First aid kit

So far as civilians are concerned this age is getting to be a kind of paper age. Within the last few months paper has also been getting scarcer and scarcer. However, it is much less scarce than metal and into paper has gone or is going practically everything that can be packaged or can be adapted to packaging with this material.

Those first aid travel kits which contained bandages, adhesive plaster, mercurochrome and the like now join the long line of "remember when it was in metal" items. Johnson & Johnson arrange two small square packages of bandage, adhesive plaster, Band-Aids, mercurochrome, two sterile gauze pads, a tube of tannic acid burn jelly and a first aid leaflet in a paper set-up box. It is a very good reproduction in paper of the handy metal box that held these articles. It is in blue, red and white. Bottom, sides and part of the lid are blue with a broad white band across the lid and the name "First Aid Travelkit" in red lettering in the band. Seen from a distance the kit appears to the observer just about the same as the one formerly used by Johnson & Johnson. To reinforce the sides of the box, there is an inner shell. This inner shell also provides the means for a tuck-in closure. The lid of the kit is hinged and is narrower than the box itself. Thus, the sides of the lid rest on the inner shell and the front flap tucks into the space between the outer box and the inner shell, thus effecting a tight closure.

For shipment, the kit is placed in a white folding carton with the name and maker on the ends and a list of the kit's contents on the front panel.

Credit: Kit made by Imperial Paper Box Corp., Brooklyn, N. Y.

All-purpose carton

Three sizes of Odorono now arrive on the market in milky white glass jars and newly designed individual display cartons. Containers are all-glass and have tops which fit down on the finish of the base. For security, a strip label is pasted around the center of the jar over the place where the top joins the bottom.

The caps are labeled in the same magenta color and modern design as the metal closures they replaced.

Two of the jar sizes—the 10¢ and the 39¢—have their own display cartons. In design they are both alike. Both of them have bases in the same Odorono-pink and stand-up back panels.

Die-cutting of the carton is particularly inventive. Center piece of the blank forms the bottom of the carton. One end is cut with tabs left inside a circle to hold the jar of deodorant firmly in the carton and to display it to the best advantage. The other end of the blank forms the stand-up panel, which is of double thickness for the necessary stiffness to keep the panel upright. It is necessary to glue only one side to hold the carton firm.

In shipment, the top of the carton is not unfolded, but is scored so that it lies flat on the top of the jar of cream. The dealer has nothing to do to the carton when the product is received. The tops flip up by themselves to make the back panel.

Credit: Cartons by William W. FitzHugh, Inc., Brooklyn, N. Y. Jars by Hazel-Atlas Glass Co., Wheeling, W. Va.

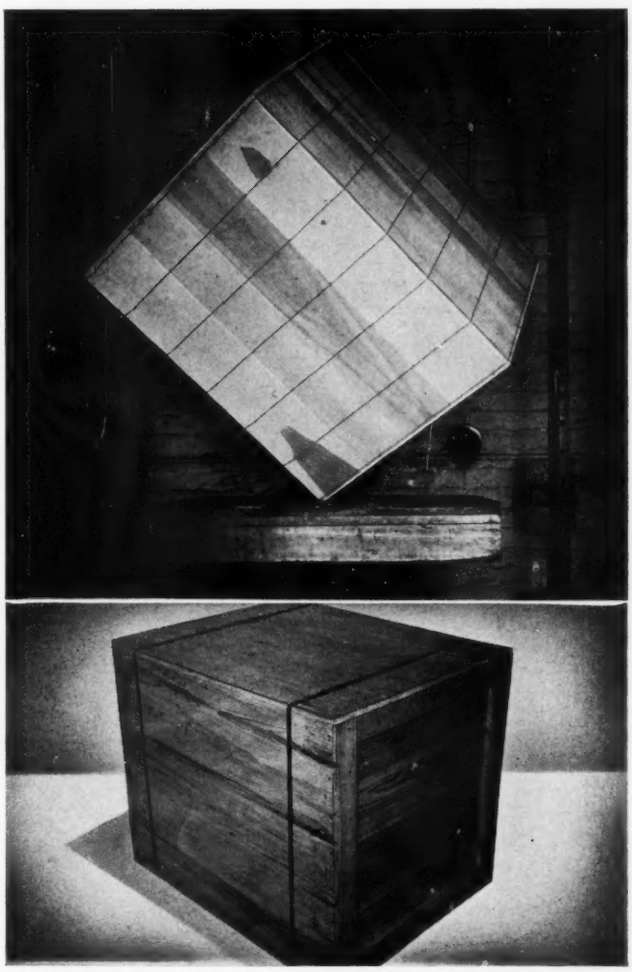
Gas mask box

When it became necessary to ship gas masks in quantity, the Chemical Warfare Service turned to the ordinary nailed box. As a shipping container the Service found that it had the necessary strength to stand up under rough treatment and that it did yeoman service in protecting the gas masks.

However, this is a war of ever increasing efficiency. Old methods of packaging, of packing and of shipping give way to more progressive ways with great rapidity. The old nailed box for gas masks could stand revision, it was felt. Savings in material together with increased strength and protection might be effected if there could be an improvement made in the nailed, wooden shipping case. An improved case was created. The Chemical Warfare Service has recently adopted a wire-bound box for use in the packing and shipping of gas masks. This is the new type container which now replaces the old nailed box. The new container effects appreciable savings in various critical materials. In addition to a 5 per cent saving in initial cost, the wire-bound box requires seven feet less lumber and about one-tenth of a pound less metal per unit. Laboratory tests have been made on the wire-bound box and these tests showed that it was approximately three times as strong as the nailed box. Of equal importance is the fact that it can be produced at a much more rapid rate than the former box. In the making of the case there is practically no waste lumber—another important point.

Other advantages include less storage space required, three sections instead of the six in the old nailed box, and less labor necessary for handling. Savings in lumber amount to approximately 340 carloads per million boxes and packing time is materially reduced.

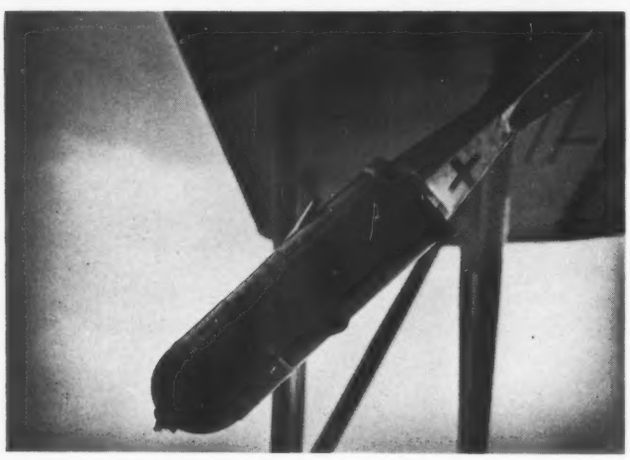
A special method is also used for packaging the masks themselves. They are each placed in a Pliofilm case which is crimped at the edges to seal. Then the wooden boxes are lined with a paraffined paper to make them waterproof.



Left. Commander R. L. Burke, Commanding Officer of the Elizabeth City, N. C., Air Base shows contents of U. S. Coast Guard's new "provision bomb" to West Point Cadet Jack W. Fehrs. **1.** *Coast Guardsman Harold V. Booth works on the "provision bomb" that he and Frederick H. Denio developed. The new nose and tail permit it to be dropped accurately and to float upward in the sea like a buoy.* **2.** *"Bomb" filled with food and medical supplies, which is being dropped from a plane.*

New foods for U. S. and Canadian fighters

1



2

The modern Robinson Crusoe of U. S. and Canadian armed forces should have a much better time of it than his fictional prototype because of the scientifically packaged units that are now standard equipment for our fighting men.

As the war progresses and requirements are better understood, more and more of these emergency rations and first-aid supplies have taken definite form.

One of these new aids for the protection of men cast adrift at sea is a *bomb of mercy*—the brainchild of the U. S. Coast Guard. It is a projectile filled with life-sustaining rations which is dropped from a plane to survivors of ship disasters. The unusual way it originated is of particular interest to show how experience points the way for the kind of package or delivery units best suited for a specific need.

Coast Guard air patrol pilots at their Elizabeth City, N. C., Air Station sensed the need for this device. Detailed to Atlantic patrol where sinkings were numerous last year, they spotted time and again survivors in life rafts who needed immediate food and medicines, but for whom it took hours before surface craft could reach them.

Commander R. L. Burke, commanding officer of the station, and his men began to do something about it. First they used a cargo chute of the Forestry Service. This was successful on land, but no good at sea because of its tendency to drift and the inability to drop it within swimming distance of weakened survivors. Next, milk cans attached to life preservers were tried. These too were difficult to drop accurately. Also the life preservers broke away and the cans containing the provisions sank.

Two enlisted men hit upon another idea. One day they were attaching practice bombs to a plane, when suddenly they thought of using this device for dropping food. The

practice bombs are light in weight and large enough to hold necessary supplies and not too bulky to handle. And more important, they could be attached to the regular bomb rack. Pilots who could hit subs with bombs, could certainly aim these bombs close to lifeboats.

However, the practice bombs were made to sink and a provision bomb had to float, and be so designed that the contents would not break or be damaged when the bomb struck the water.

The two ingenious Coast Guardsmen, Frederick H. Denio, metalsmith, first class, and Harold V. Booth, aviation machinist, first class, took their idea to their commander, who was as enthusiastic as they. The two men were given the opportunity of transforming the practice water bomb into a practical food bomb.

They devised a concrete nose cast in four sections and a sheet of cardboard spread with a thin cover of cement to bind it together. Upon striking the water, the concrete breaks off, so that the bomb floats like a buoy. A thick layer of sponge rubber or heavy cork between the nose and the reinforced bottom of the bomb absorbs the force of impact when the bomb hits the water and the contents escape damage. A new fin was also devised.

They didn't have to wait long to give the bomb a real test. Lieutenant Commander Anthony J. DeJoy was on duty. A small lifeboat filled with men was spotted, all waving frantically at the plane. Pilot DeJoy dropped within 100 feet of the water when he released the provision bomb. It fell within 10 feet of the lifeboat. He could see its bright Red Cross and yellow fin floating on the water. One of the men in the boat hauled it in and the plane crew knew the men would be all right until the surface boat could pick them up.

This provision bomb resembles a depth bomb in appearance. Its weight of 40 lbs. enables it to be retrieved easily. The supplies sealed in include seven cans of ration drinking water, concentrated food rations in waxed waterproof cartons, cigarettes and matches in waterpoof case, a pint of whiskey protected with corrugated board, a first aid kit, etc. Instructions are printed in four languages: Norwegian, Spanish, French and English. On every mission which the bomb ha been used it has proved successful, particularly because of the accuracy with which it can be aimed, in addition to its other efficient features.

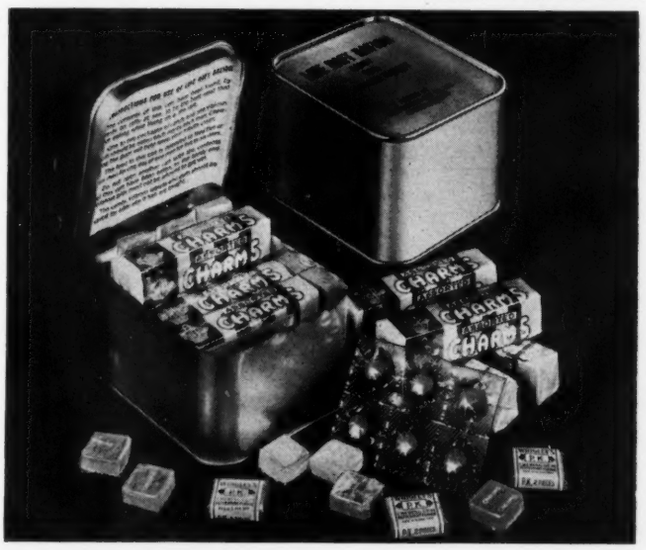
There is continuous s udy by the packing divisions of the armed forces to improve existing ration packages and components. Another new one is a Life Raft Ration can for the U. S. Army Air Corps. To provide both the shape and size can needed, 6-lb oblong key-opening luncheon meat cans were cut down to three inches. These packages will be rolled up inside the rubber life rafts. The cans are hermetically sealed and completely lacquered on the outside. In each container are 12 packages of Charms, 6 packs of P-K's and 6 vitamin tablets in a heat-sealed cellophane packet, enough for five or six men for one day and one man for five or six days. Printed directions are closed in each can.

The ration was prepared on the assumption that men on a life raft would not have available drinking water and consequently dehydrated concentrates could not be used without consuming a large quantity of water. Therefore candy made from sugar and water, although the water content is very small, will serve a great need.

The Quartermaster Corps for the Army Air Forces has developed a special combat lunch for bomber crews on flight missions of from eight to 12 hours duration. It is packed in units sufficient for three men and composed of packages of

PHOTO COURTESY CONTINENTAL CAN CO.

3



4

3. *New type life raft ration can for U. S. Army Air Corp. These 3-in. cans contain 12 packages of Charms, 6 of individual P-K's and vitamin tablets.*
4. *Special combat lunch for bomber crews on flight missions of from 8 to 12 hours duration. These units are sufficient for three men.*

ROYAL CANADIAN NAVY

Royal Canadian Navy lifeboat and raft rations recently developed by Lt. R. W. Millard of Vancouver, left, and Surgeon Lt.-Commander J. E. de Belle of Montreal, right. Strip, dangling from opened tin at left rear, is protective band which is pulled to open ration box.

foods which require little or no preparation that cannot be done on electric hot plates or other cooking facilities with which planes are equipped.

The carton container is a waterproof paperboard affair, wax dipped. Inside are cartons of rice, sugar, biscuits, apricots, fruit bars, bouillion cubes, chewing gum; tins of dehydrated beef, powdered milk, preserved butter, soluble powdered coffee; packets of candies, lemon powder, sugar and salt. The salt is in the waterpoof kraft, foil and asphalt laminated packet with sifter device, described previously in Modern Packaging. An interesting item is a package of concentrated tea tablets in a folder with each tablet housed in a separately heat-sealed cellophane compartment.

Because of the sharply varying temperatures in which bombing planes operate, ranging from 135 degrees above zero on the ground to 50 degrees or more below zero in the stratosphere, the food items were selected on their stability in packaged state under sudden or protracted changes of temperature, as well as for their compactness, light weight and high nutritive value.

Another food unit recently planned by the Quartermaster Corps is a 10-in-one ration for overseas shipment. This includes a day's breakfast, lunch and dinner rations for ten men, or ten day's food for one man. Actually, the 10-in-one is two 5-in-one units packed together in a single shipping case. Five different printed menus are included for preparation of the 10-in-one ration.

Non-canned items in quantity for five are packed in a double wax-dipped arsenal box, inside dimensions of which are $9^5/_8$ by $6^3/_8$ by $7^1/_8$ in. The canned items also in quantity for five men are packed in a solid fibre box of approximately the same dimensions. Two of each of these boxes are then placed in a V-1 box with sleeve. This measures about $20^1/_2$ by $14^1/_2$ by $7^1/_2$ in. The food items contained in this assembly are substantially the same as those contained in other ration units. An interesting innovation is the inclusion of Halazone tablets to purify water for drinking. Previously such tablets were usually included with medical or first aid supplies. However, it has been determined that when drinking water is required for the preparation of dehydrated foods, coffee, tea, etc., that a package of these tablets in a food unit is an important aid to protect a soldier from contaminated water.

Emergency units developed by the Canadian Services are of particular interest to show how our good neighbors across the border are solving similar military packaging problems.

All three of Canada's fighting services have developed emergency rations during the past two years. They have been developed to individual requirements of each service with a free use of information by the three services for mutual benefit. Emergency rations for Canadian sailors, soldiers and airmen utilize all that is known of emergency rations of other fighting forces and in addition take into consideration their use in Canada's varied climates the year round. They have been thoroughly tested and are now being issued to Canada's fighting men as standard equipment. The latest in scientific packing is utilized to keep the rations from becoming rancid, to stand up in weather ranging from 40 below zero to 120 degrees heat. Food manufacturers, packaging experts and nutritionists have devised means of packing the rations in compact wax-impregnated packages, with each individual item so packed that even if the outside container broke the foods themselves would not be damaged.

The Canadian Army Mess Tin Ration is a kraft wax-coated box weighing fully packed an ounce short of 3 lbs., measuring $7^9/_{16}$ by $4^1/_2$ by $3^3/_8$ in. It contains food with a caloric value of 3,750 calories, adequate to maintain a man a day under extreme exertion conditions. Tests show that men can live on this ration for a month without loss of weight or efficiency. It is supplemented with the soldier's standard 2-pt. water bottle.

In the box are small tins of beef and pork, sardines, jam and butter, and a can opener is supplied. Tea is carried in commercial tea bags; sugar cubes are wrapped in the usual commercial manner; and 10 cigarettes are packed in a carton. Specially prepared biscuits are heat sealed, regenerated, packed in cellulose film and then placed in a cardboard carton. Cheese is foil wrapped and placed in a wax-dipped cardboard container. Pea soup powder, milk and sugar mixtures and chocolate powdered milk drink are paraffin wrapped in wax-dipped cartons. Soluble coffee is packed in laminated foil, heat sealed. A secret formula high calorie content chocolate bar is heat sealed, regenerated, wrapped in cellulose film and then in a kraft wrapping paper. Hard candy for use during the day after meals is wrapped in wax paper with an outer kraft paper. Sal is carried in a single kraft bag and chewing gum in a heat-sealed kraft envelope.

Somewhat similar to the Canadian Army ration is the Royal Canadian Air Force basic aircraft ration used in various rescue equipment and carried as basic equipment by most aircraft on coastal patrol. This kit carries about the same food as the Army kit, has a few added items such as a cube of bovril, a fat capsule and a fruit bar of dried fruits such as apricots, dates or raisins. The box weighs 2 lbs. measures 4 by 3 by 6 in., is also of kraft cardboard wax-dipped

ROYAL CANADIAN AIR FORCE

Right. These items are contained in the new Royal Canadian Air Force bandolier emergency kit, worn by all aircrew members aloft. Equipment includes food rations, first aid equipment, fishing tackle, matches, heat tablets, compass, knife and whistle. Below. This is the way the airman wears the bandolier.

and contains enough for one man for one day, with food value of 2,447 calories.

The Royal Canadian Air Force has other emergency food ration kits. The latest to be developed is a bandolier type worn by every aircrew member when aloft. It is a waterproof wrapping worn as a lifebelt from straps across the shoulder under the flying suit, is but 1 in. in thickness and contains enough rations for three days under normal circumstances. The rations consist of specially prepared biscuits packaged in laminated plasticized wax-coated cellophane, sealed to withstand extreme temperatures, then packed in waxed tissue, then in a cellophane pouch, special formula chocolate bars wrapped in wax paper and chewing gum commercially wrapped. In addition to this food kit, the bandolier contains matches, fire tablets, fishing equipment, first-aid supplies, pocket compass, heliograph mirror and smoke generators for signalling, plastic whistle instead of a metal whistle to keep the lips from freezing in cold weather, a strong knife capable of cutting through brush and chemical heat tablets to start fires with damp wood. Instructions with this kit state that "the rations alone will keep you going for three days in comparative comfort, for more than a week if you stretch them out. Fire tablets will enable you to start a fire in damp kindling and will save using precious matches, also provided. Place fire tablet under the wood on its edge, light with a match and shield from the wind . . . You are good for an indefinite period in the wilderness if you use the emergency aids with ingenuity and if there is any sort of fish in the country."

The Royal Canadian Navy has developed tinned food packages for use in lifeboats and on life rafts. The tinned package developed is sealed with a metal strip like a sardine can and is painted gray. When opened the lid contains instructions to eat the rations slowly, how to use the tins inside the main package. This main tin weighs 17½ lbs., costs about $7.50 fully filled. There are four on each 10-man raft and 8 on each 20-man life raft. It contains eight 16-oz. tins of sterilized water in rustproof tins, eight tins of individual one-man rations together with a box of

malted milk tablets and packages of chewing gum.

Developing the water container and a water formula which would stand up in all weathers was a problem which took seven months and 500 laboratory experiments to solve. The water tins are made with standard dies, are tin plated inside and lacquer dipped outside. Each has a key spot-welded to one end of the top. At the other end the tear-strip covers the pour-hole. A cork is attached with string to enable the pour-hole to be closed when the water is not being used. The water is packed with a vacuum of 20 to 24 in. and sterilized at 220 deg. F. for 45 minutes. It has all excess oxygen and carbon dioxide removed and will last indefinitely in the tins in good condition. It tastes practically as good as tap water.

The food products in this Navy mess tin consist of a secret formula chocolate bar, (*Continued on page 112*)

PACKAGING PAGEANT

1

1 Schiaparelli's perfumed oils come out in square, be-ribboned bottles which have been given a surrealist touch. The label, painted by Dali, shows a mermaid beautifying herself. It is done in new violet and shocking pink and the presentation of the subject matter is fantastic and enlivening. Same design and same type of bottle are used for all four of the new perfumed oils. Sizes of the bottles range, however, from 1/2 oz. to 8 oz. for the products—oils for body, face, eyelids and lips.

2

2 Latest addition to the Eisenberg Original cosmetics is the cologne sachet, packed in these round fibre cans. Since the war and the need to conserve certain perfume ingredients, many women have turned to body sachets. Many makers of cosmetics have created attractive, easy-to-use containers and these bright red, green and blue cans show the trend toward sachet in talc-like packages.

3

3 The familiar Blatz Pilsener 12-oz. bottle now shares honors with the new Blatz quart-size bottle. Popularity of the 12-oz. size encouraged the Blatz Brewing Co. to adopt a handy quart bottle for its Pilsener. The package theme, which distinguished the smaller bottle, is repeated in the colorful label on the larger container. The familiar Blatz script has also been carried over in the quart package so that the brand is recognized at once.

4

4 With minimum loss of identity the Peterson Ointment Co. of Buffalo, N. Y., changed packages for their ointment. The previous package was the small round tin, shown on the left in the photograph. The new one, at right, is of glass with a metal, screw-on closure. A band of paper, matching the cap in color, is affixed to the base and completes the work of simulating the original package. Jars and closures by Hazel-Atlas Glass Co., Wheeling, West Va.

5 The orange, black and gold oval tin of Cuticura Talcum, familiar to a number of generations, is rapidly being replaced by a round, paperboard container, covered with a glazed orange and white wrapper, designed for high visibility on drug counters and shelves. The new package, with convenient rotating sifter top, holds the same 4-oz. quantity of the product. In making the package change, the company has also made a change in content. Cuticura becomes an all-purpose talcum with a new fragrance. Fibre can by American Can Co., New York City.

6 This carton gives all the appearance of a carton with a cellophane window. It is not, however, but a cellophane wrap on the die-cut carton presents the same effect. Carton is die-cut on the front panel to allow the crackers to show through. The brand name of the Battle Creek Food Co. appears above the window. Carton made by Michigan Carton Co., Battle Creek, Mich.

7 This waterproof envelope, made of a laminated sheet combining kraft, asphalt and lead foil, is nailed to cases for overseas shipment to carry invoices, bills of lading and other necessary data. These envelopes are used on many types of military shipments—ordnance, medical, quartermaster. They are especially valuable in shipping those units which contain a variety of parts. The envelopes provide complete information in addition to markings on containers which may be washed off. Envelopes made by Cupples-Hesse Corp., St. Louis, Mo., from material by Reynolds Metals Co., Richmond, Va.

8 Dehydrated soup mixes have been appearing in small pouch-type bags or envelopes, but here is a dry soup mix which is put up in a glass jar with a metal top. Super-Chefs V-D vegetable noodle dish is an attractive mix and the clear glass jar shows it off in an appetizing way. Jars by Ball Bros. Co., Munice, Ind.

9 All kinds of polishing cloths are placed in these printed envelopes by the Cadie Chemical Products, Inc., of New York City. Each cloth serves a particular purpose and the envelopes carry interesting illustrations which show how the contents are to be used. Since the chemicals with which the cloths are treated are not subject to evaporation, the ends of the envelopes do not have to be sealed. Envelopes made by Milprint, Inc., Milwaukee, Wis.

5

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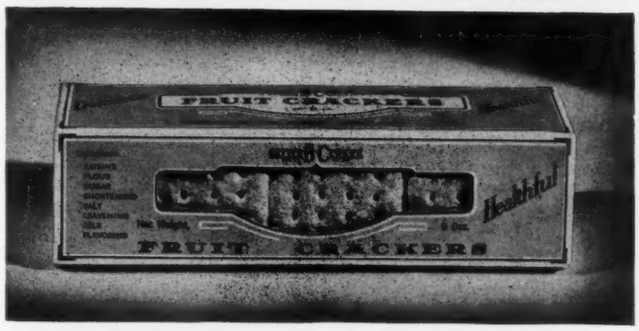

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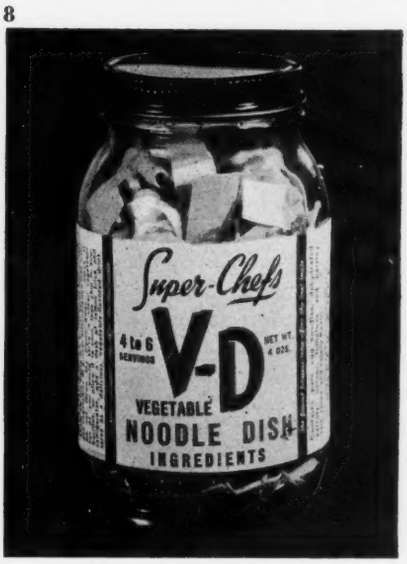


1. *Fluoroscopic equipment built for continuous inspection of cans which move through on conveyor.*

See-through inspection with the fluoroscope

It happens only on rare occasions, but every now and then you read in the newspapers about somebody who has brought suit against a food company, because he ate some of that company's product, bit into some foreign matter out of a package and broke a tooth or cut his lip.

In spite of the utmost precautions such accidents occur in the best companies. When they do, no matter how rarely, they may result in costly legal suits and a lot of unfavorable publicity. No company wants this to happen.

In the past, there may have been no way to guard against such happenings, because once a package was filled and sealed there was no way to see what was inside of it. Today, with X-ray and fluoroscopy, finished packages may be given the once-over before they leave the lines to see that contents contain no foreign matter.

Several candy companies are already making fluoroscopic examinations of their packages for the purpose of detecting foreign matter before they leave the plant. A tobacco company is using fluoroscopic examination to find any unwanted matter which may find its way into its packages of chewing tobacco, and one of the large canning companies in the Midwest is examining the content of canned foods as they leave the sealing machines.

Another packaging application is the use of X-ray for examining sterile packages containing hypodermic needles to see that no broken needles are included in the packages when they leave the manufacturer's plant.

California Citrus Packers claim that in one record year when frost made every orange count they saved $7,000,000 by using fluoroscopy for the examination of fruit prior to boxing. Under the fluoroscope, oranges may be inspected for deterioration by the appearance of finger-like areas of greater densities extending outward from the center. On examination it was found that many oranges which were previously thought to be inferior for packing were in perfectly good condition when inspected under the fluoroscope. These oranges are now being saved and thereby increase by that much the quantity that can be shipped and sold.

A development which is making possible greater use of this kind of package inspection is a new easily operated X-ray apparatus known as the Searchray. This equipment may be built for individual unit inspection or designed so that it may be operated over a continuous conveyor belt on which each package may be viewed as it is conveyed past the fluoroscope. Packages, it is claimed, can be examined by the conveyor method at the rate of 60 to 90 per minute.

It is necessary only to plug the apparatus into 110-volt A.-C. power source. The transformer in the instrument steps up the power to 80,000 volts. To operate the models designed without conveyor arrangement, it is only necessary to open compartment door, insert object, close door, push button and view the internal structure instantly through an eye level eyepiece. When conveyor is used, the packages pass through the instrument cabinet and are viewed through the eyepiece as they travel past. There is no complicated system of dials or controls to adjust.

The operator is completely protected by a rayproof, shockproof housing of a heavy lead barrier. On the models without conveyor, an electrical interlock interrupts the circuit whenever the examinating compartment door is opened. Similar safety features are provided for the operator who inspects packages traveling through the apparatus on a conveyor. In some installations, packages with foreign material are removed from the conveyor by a mechanical device controlled by the operator.

It takes very little skill to read the fluoroscopic image and it is said operators can be taught in a very short time what to look for. Each problem of inspection has its particular characteristics and once these are mastered, anything irregular from the way the contents of the package should look can be detected quickly. Tendency to eye fatigue of the operator is counteracted by changing operators frequently. Non-metallic substances are usually less dense than metallic, therefore the operator must be trained to these differences. Voltage may also be adjusted for desired contrasts to give thorough inspection. Higher voltages obviously provide better results for denser substances.

The use of fluoroscopy and radiography (distinguished from the former in that the X-rays are recorded on photographic film instead of on a fluorescent screen) has increased greatly in industry during the war, particularly for the inspection of precision instruments. In fact, this has been one of the major reasons for the development of apparatus such as described in the article. Such widespread use means that such instruments are now made in greater quantity, which naturally puts them into a price range that is less prohibitive than formerly. Instruments such as are described here can now be purchased within a range from $750 to $3,000, depending upon the requirements of the installation. In the case of the California oranges, for example, this initial cost was quickly absorbed within a short time.

Several hundred applications for this kind of inspection are now being studied, including many food products such as powders, flour, shredded cocoanut, dehydrated foods—in fact, any product which undergoes processing which includes a number of operations where foreign matter might get in. There are numerous other applications similar to the orange inspection for determining quality before packing.

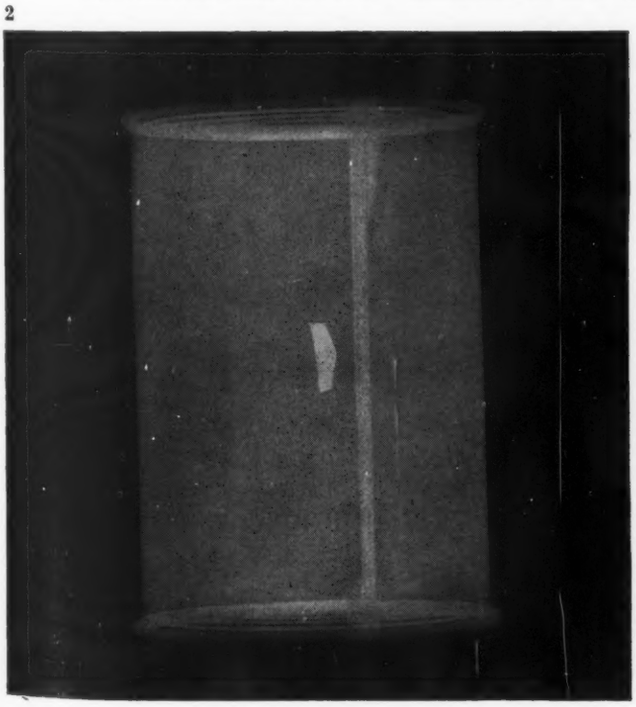
Fluoroscopy and radiography also have an application in the examination of materials used for packaging. Such examination has been used for inspection of the properties of paper, fabrics, leather, leatherette, ceramics, glass and wood. For example, poor workmanship, bad gluing and grub holes may be discovered in wood by this method. Larvae of insects have been detected in wood. Such discovery can prevent the use of unsound wood in the making of container or for many other purposes.

Another use for fluoroscopic examination closely related to packaging, is for the inspection of all incoming and outgoing packages and small luggage in war plants, express agencies, custom houses, post offices and police stations. Suspicious-looking packages and luggage can be searchrayed without exposing anyone to the danger of opening unknown parcels. The fluoroscope has also been useful in discovering contraband and in detecting and discouraging theft in war plants.

Credit: American Society for Testing Materials, Philadelphia, and North American Philips Co., Industrial Electronics Division, 419 Fourth Avenue, New York City.

2. Foreign matter, like the piece of metal shown here, may be easily detected by fluoroscopic examination of cans. 3. This is a radiograph of a box of candy. Arrow points to tiny piece of foreign matter, which if not removed could involve a manufacturer in a costly legal suit, many times the original cost of a fluoroscope.

2



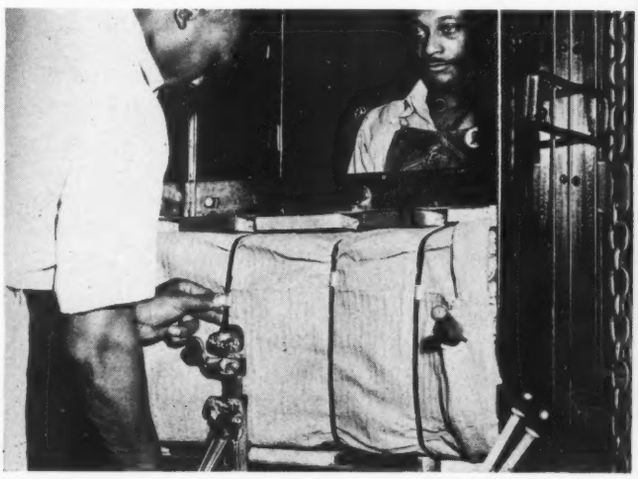
3

How to bale for the army

A new method of applying and fastening the Osnaburg baling cloth for covering bales has been developed and is now in use at the Philadelphia Quartermaster Depot. This method precludes the necessity of sewing bales. It is accomplished by the use of Osnaburg tubing pre-sewed on the bias, which is pulled over the bale after it is formed.

It is believed that this operation will effect a saving of two-thirds of the labor now employed in sewing. In addition, the use of tubing effects a saving of Osnaburg of approximately 20 per cent. It is further believed that this operation will increase the production of bales per machine. Specification for the new type of bale is QMC Tentative Specification PQD 357.

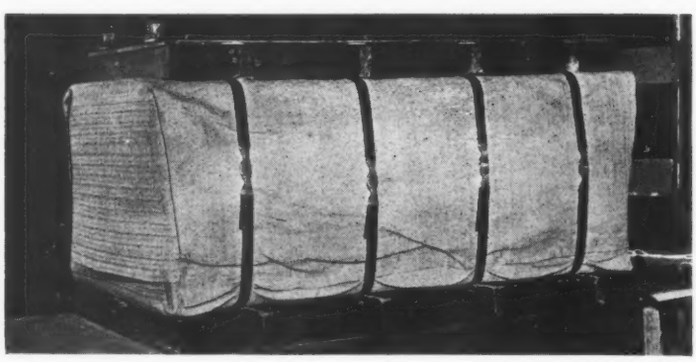
This illustrates the method used for folding the paper in the so-called "open-end" type of baling machine.



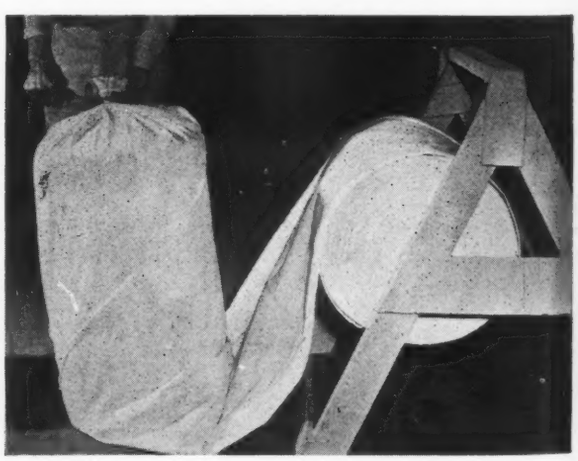
This illustrates the method used for strapping the bale in the so-called "closed-end" type of baling machine.

Shows method of forming the bale in the "closed-end" type baling machine.

Applying bias tubing over bale. Best method is to slide tubing over bale, seal first end, then slide bale off end of table.

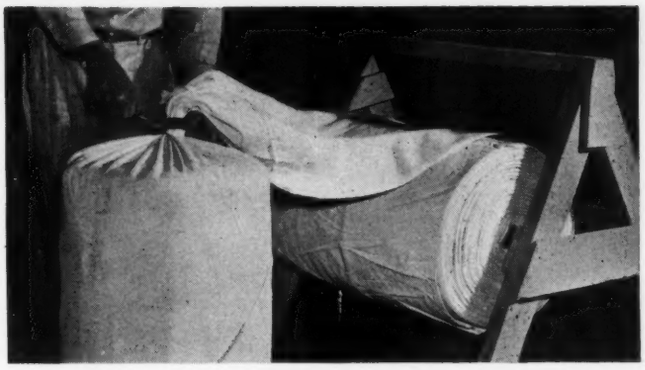


Method of strapping the bale in "open-end" baling machine. Formed-edge strapping has convex surface adjacent to paper.

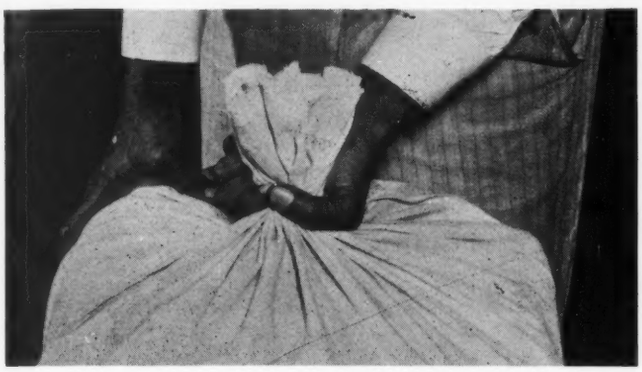


Application of the wire-tie to the first end of the bale with the bale in a vertical position.

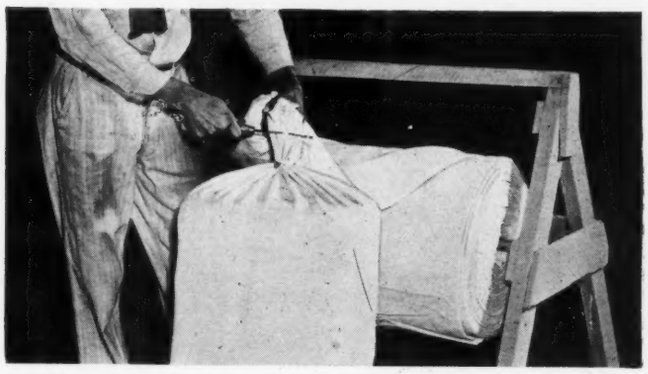
Showing the application of wire-tie to the first end of the bale when in a horizontal position.



Applying wire-tie on second end of bale, as close to bale as possible for minimum slack in tubing.



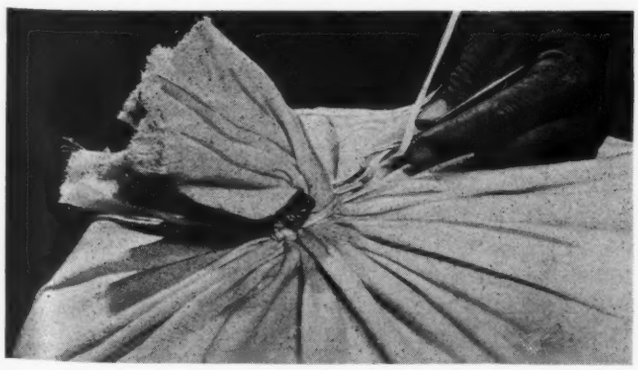
Method of gathering the cloth to form the ear and then holding it while applying the wire-tie.



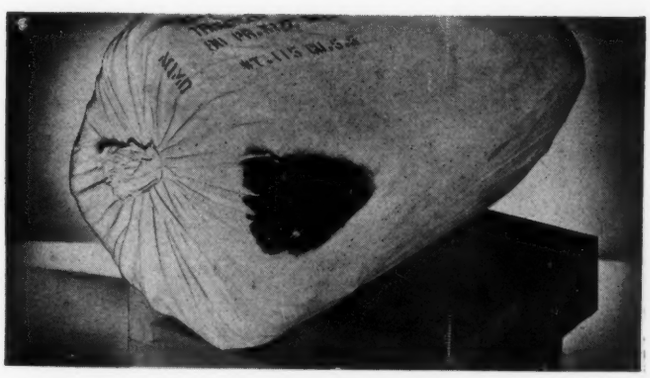
Cutting the tubing after sealing second end of the bale, prior to applying the loops of twine.

Twisting wire-tie. Ear held firmly and wire-tie stretched taut by pulling away from ear with tool.

Method used in stenciling the bale which is the last operation in its preparation for shipment.



Making lock stitches to fasten both ends of twine securely into the baling cloth at base of the ear.



Finished bale, both ends securely tied and complete with stenciling and service color marking.

Above. Here are the batteries entering the mandrel and the moisture-vaporproof bag. Below. Air is removed from the bag and then the lips are folded into position, ready for the heat-sealing operation.

Batteries for the battlefront

The necessity for painstaking care and accuracy in packaging and packing for overseas shipment was forcibly brought home to the Signal Corps of the United States Army by the landing on Guadalcanal. A large number of the dry batteries landed were found to be dead when they were needed for immediate use. Moisture penetration and consequent falling apart of cartons had ruined them. The batteries had been packed in corrugated board cartons and encased in wood. The cartons were not waterproofed and the wood cases furnished no protection against penetration of water and moisture after immersion.

Communications in a combat zone are the responsibility of the Signal Corps, and the importance of the dry battery in maintaining a communications system cannot be underestimated. The Signalmen of the army cannot perform their work without batteries to supply power for radio transmitters and receivers, telephones, searchlights and flashlights, and automotive equipment.

Thus it became the immediate task of the Signal Corps to develop a packaging method for dry batteries which would insure resistance to the roughest handling, immersion, and to all extremes of climatic or atmospheric conditions. Experiments were conducted at the Philadelphia Signal Depot by the Packaging Section, and a specification was written and released in April 1943 covering the packaging and packing of at least 36 types of dry batteries used by the Signal Corps.

No longer taking any chances with the elements anywhere on the globe, the Signal Corps now packs dry batteries into unit packages which are wrapped in a protective sealed bag, offering protection against water submersion, moisture-vapor and extreme humidity conditions; the unit packages into standard cartons; these standard cartons into wooden shipping boxes which are lined with a waterproof liner.

The unit package is composed of the smallest number of batteries assembled into a single package. The batteries are enclosed in a corrugated or solid fibre carton and when sealed are placed within a protective bag. This sealed bag, which wraps each unit package is Type A-10 laminated film combining kraft, lead foil, cellophane, bond paper, asphaltic sealers and thermoplastic adhesives, and is presently being used by all Signal Corps Depots where batteries are being packaged. This material provides excellent moisture-vapor resistance and does not rot, blister, crack, bleed or otherwise deteriorate at temperatures ranging from 40 deg. to 150 deg. F. Of equal importance with the inherent moisture-vapor imperviousness of this material is the construction of the bag in so far as the moisture and airtight integrity of the seams and joints are concerned. Before it is used, each bag is checked for pinholes and air leaks in order to assure a continuous unbroken surface. If the bag passes this check-up successfully, it is put to use and heat sealed so that all seams and closures provide protection equal to that provided by the body material. All loose folds are held in place with adhesive or tape and a neat compact unit results.

Other materials that might possibly be used for this protective bag include laminated paper and metal foils, laminated paper and plastic films, some coated materials, and some plastic films.

Unit packages, carefully wrapped in the sealed foil bags, are placed in standard cartons, the number of unit packages in each carton in accordance with Signal Corps specifications for the packing of various sizes and types of dry batteries. Previously the cartons were corrugated board, regular slotted or full overlap style. Now the Signal Corps is using water resistance solid fibreboard cartons (V-1 or V-2) whenever possible.

The specified number of standard cartons are packed in a waterproof bag liner placed within the wood shipping box. This waterproof bag liner presently in use conforms to Type H-1 waterproof paper which consists of three sheets of paper cemented together with asphaltum and crêped in both directions of the paper, or crêped in one direction and pleated or corrugated in the other direction. Other combining agents equal in all performance respects to asphalt may be substituted and additional impregnation or coating of the paper is permissible and sometimes practical. Where necessary, the lining is fastened to the box with an adhesive, but at as few points as possible.

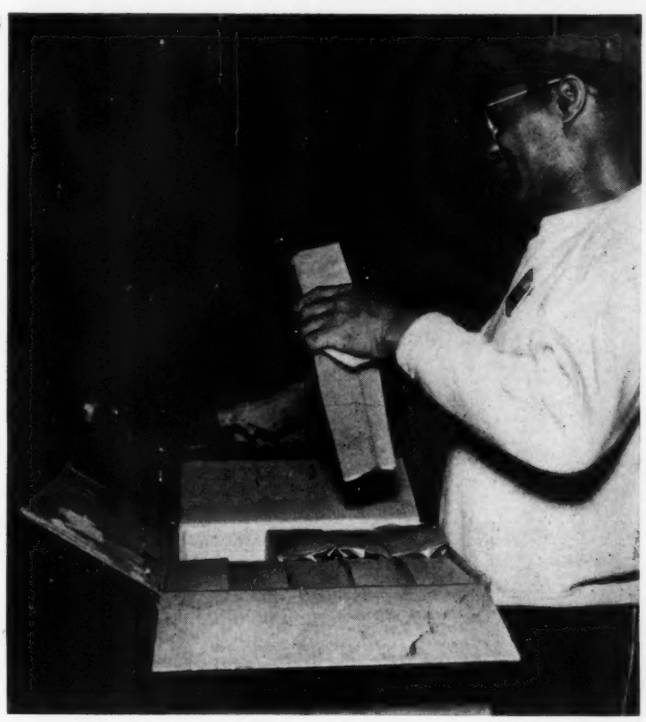
A style 2 or $2^1/_2$ nailed wood shipping box is used for the outer shipping container and conforms with U. S. Army Specification 100-14A.

Preceding immersion tests, drop (*Continued on page 114*)

1

2

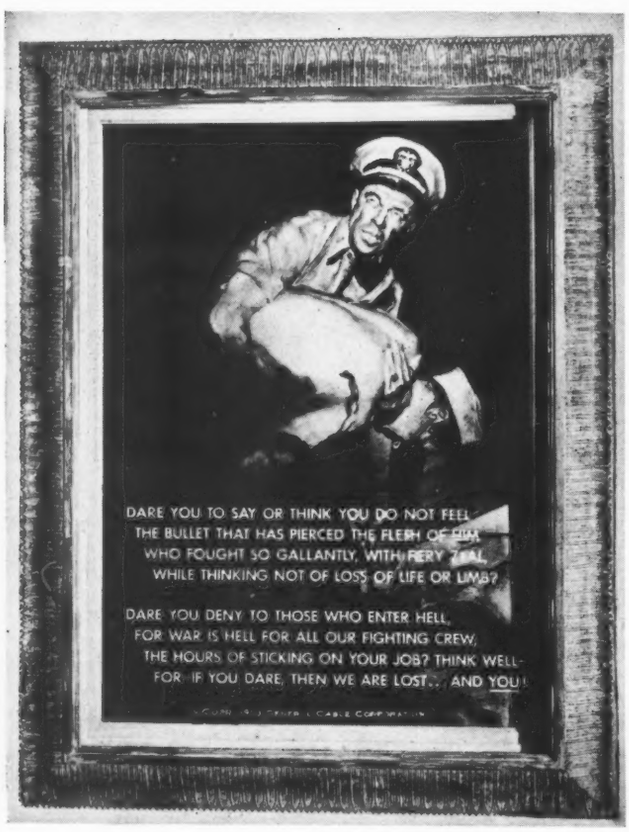
3



1. Two operations are shown in this photograph—the bags enter the heat-sealing unit and then are seen leaving the cold chamber. 2. This is a close-up of the operations shown in the photo on the lower left of the opposite page—vacuum is applied to remove air from interior of bags and the bags enter the heat-sealing unit. 3. Bags after having been completely sealed are now being packed in corrugated boxes for placement within a waterproof lined solid nailed tongue and groove wood box.

DISPLAY GALLERY

1

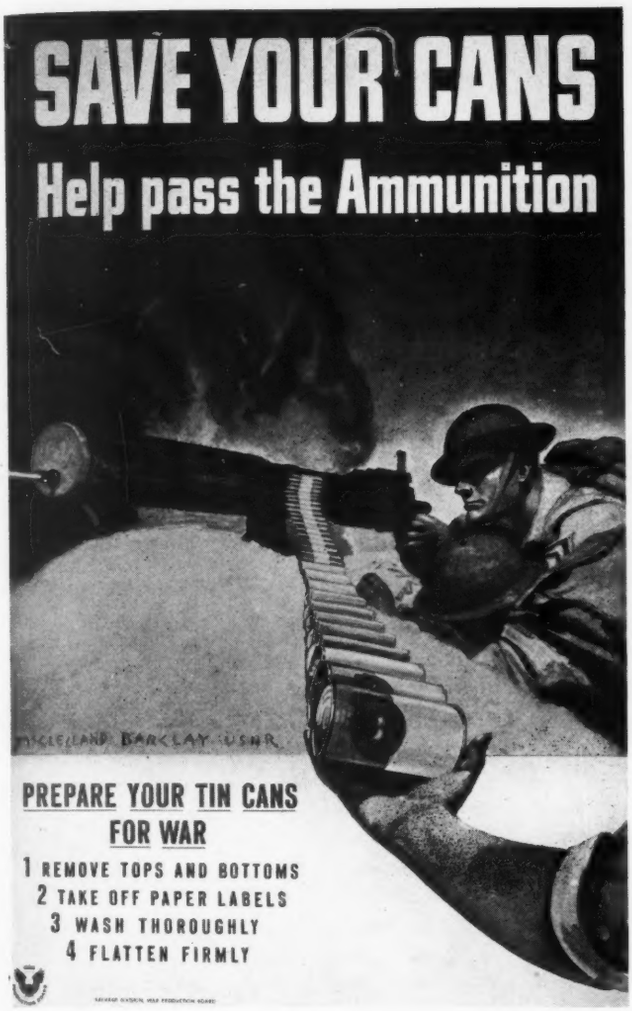

DARE YOU TO SAY OR THINK YOU DO NOT FEEL
THE BULLET THAT HAS PIERCED THE FLESH OF HIM
WHO FOUGHT SO GALLANTLY, WITH FERVENT ZEAL
WHILE THINKING NOT OF LOSS OF LIFE OR LIMB?
DARE YOU DENY TO THOSE WHO ENTER HELL,
FOR WAR IS HELL FOR ALL OUR FIGHTING CREW,
THE HOURS OF STICKING ON YOUR JOB? THINK WELL-
FOR IF YOU DARE, THEN WE ARE LOST... AND YOU!

2

1 Quality Bakers of America members throughout the country launched a nutrition campaign in which they signed up grocers as Home Front Quartermasters, pledging their support of the government's National Nutrition Program. Throughout the year these grocers are constantly supplied with nutrition news and aids by Quality Bakers members. One of the most outstanding features of the campaign is the display material, such as that shown in the photograph and used by Stroehmann's. All the pieces are store units, done in full color. Some of the store displays hold the loaf of bread, others hold give-away booklets. Copy on all the material stresses support of the National Nutrition Program and is aimed to help the housewife keep her family well fed despite the problems of food shortages and rationing. Display pieces by McCandlish Lithograph Corp., Philadelphia.

2 General Cable Corp. recently conducted a poster title contest among its 12,000 workers in all 8 plants of the corporation. The Awards Committee selected the poem by William S. Porter, an employee of the Perth Amboy, N. J., plant as the winning entry. The poster, on which two stanzas of Porter's poem appear, was painted by C. C. Beall. This poster is the sixth of the major series turned out by General Cable since the start of the war.

3 One of Lt. Commander McClelland Barclay's most striking paintings has been adapted for use in the current tin collection campaign of the War Production Board's Salvage Division. Thus, although McClelland Barclay was lost in action in the Pacific, his posters remain to carry on the fight. Over a million pieces of color lithography have been processed for national dis-


SAVE YOUR CANS
Help pass the Ammunition
PREPARE YOUR TIN CANS FOR WAR
1 REMOVE TOPS AND BOTTOMS
2 TAKE OFF PAPER LABELS
3 WASH THOROUGHLY
4 FLATTEN FIRMLY

3

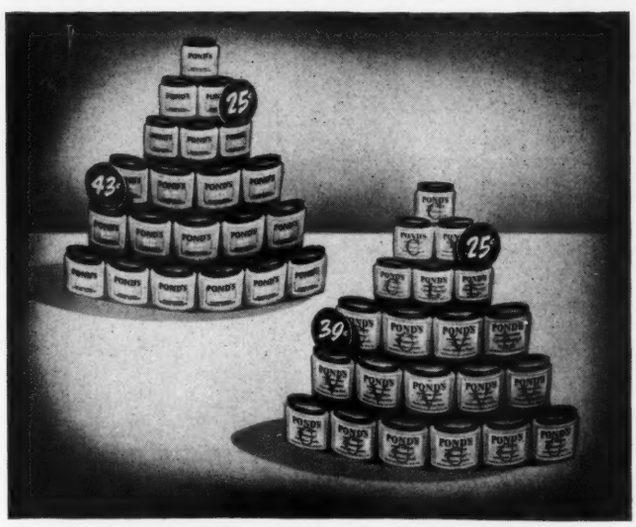
tribution by the various state salvage committees. Posters by Einson-Freeman Co., Long Island City, N. Y.

4 To introduce its new type of shaving stick, Slick Stick, The Delland Corp. of New York City is using display cartons and display cards. The sticks are packed in black and red fibre containers and a dozen of them fit into the carton. The face of a smiling man using the shaving stick is repeated in the carton and the poster. Shaving stick containers, George V. Clark Co., Inc., Long Island City, N. Y. Display carton, Robert Gair Co., Inc., New York City. Poster, Display Sign Center Inc., New York City.

4

5 These counter cards from Pond's are lithographed in full color on heavy cardboard. They are designed to help dealers avoid having their stocks of Pond's creams tied up in pyramid displays. The easel attachment at the back of each card rounds out the front, giving an illusion of perspective that makes the display surprisingly realistic. Display made by Oberly & Newell Lithograph Corp., New York City.

5



6 Miles Laboratories, Inc., are getting their two kinds of One-A-Day Vitamin Tablets out front on drugstore counters in this new display container. The pictorial on the display panel is lithographed in full color. The inside of the bottom of the container also carries full color reproductions of the various sizes of packages, just as they appear when the container is full. This gives the impression of another layer of packages even though one or more of the sizes may be temporarily depleted. Display by The Forbes Lithograph Co., Boston, Mass.

6

How cigarette companies save cellophane

Center package in top row is without cellophane. Insert calls this to dealer's attention; asks him to sell it first.

The amendment to WPB Order L-20, restricting the use of cellophane for the packaging of cigarettes and other tobacco products to 90 per cent of previous consumption of such materials in 1942, has now been in effect since the first of the year.

The various ways leading cigarette manufacturers are working out packaging methods to meet this situation are of considerable interest.

On June 1, for nation-wide distribution, the American Tobacco Co. began to pack one package of Lucky Strikes in each carton without cellophane. This package is the center one in the top row. Inside the carton to call the retailers' attention to this package, the company places, as shown in the accompanying photo, a printed insert, telling dealers to call this to the attention of patriotic customers when selling the cellophane-less pack. The insert emphasizes the fact that "our fighting men need cellophane and its ingredients." In this way, the package unprotected with cellophane is sold first and thus leaves the remaining cellophane wrapped packages for later sales.

Liggett & Myers in a memo dated July 17 to their jobbers stated: "Commencing next week we will for a certain period of time omit the cellophane wrapper on packages of Chesterfield 20's to conserve our supply of cellophane and thus enable us to have the added protection of cellophane during the winter months. With respect to sales through vending machines where pennies have been used for giving change, we understand there will be great difficulty in inserting the pennies into the packages without an outside wrapper and for this purpose only, we will provide packages of Chesterfields wrapped with cellophane or other suitable paper. Cases containing cellophane wrapped packages will be marked 'for vending machines.'"

Liggett & Myers also made announcements over Chesterfield radio programs during August to the effect that "if your next pack of Chesterfields has no cellophane wrapper, here's the reason, 'Cellophane is a vital war material and our government has found it necessary to limit its use for the wrapping of cigarettes to help win the war.'" Such explanations over the networks help the public to understand the real situation and to enable them to cooperate intelligently with the various conservation measures which manufacturers have had to adopt from time to time.

Philip Morris packages have been without cellophane for the past six weeks' production. The company felt that the humidity in the air in summertime helps to keep cigarettes fresh longer than the steam-heated atmospheres of the winter months. Therefore, they decided to package their cigarettes without cellophane for the six summer weeks to build up a reserve of cellophane for their winter production.

At the time of going to press, Reynolds Tobacco Co. had no announcement to make with regard to plans for cellophane on Camels.

At present another company told us they plan to retain the use of cellophane on their leading brand, but will take it away from lesser known brands which they make. Also, they are substituting glassine for their chewing tobaccos which up to the present time were cellophane wrapped. This will provide the company with sufficient supply of cellophane for the main brand.

So far consumer reaction to these changes has been good. Practically everyone these days is getting accustomed to package changes. They know such wartime measures are necessary and accept them in the patriotic spirit in which they have been made. More and more the public is being educated to these changes through newspaper, magazine and radio advertising and through wide editorial mention. Dissemination of more and more of such information will be necessary as the war progresses and shortages of all kinds of packaging materials and containers continue to become more acute.

In other lines, manufacturers have found that posters and display cards have been of great help in getting across to the consumer package changes and replacements. At the point of sale, the consumer is receptive to such information.

Last Minute News from Washington

• **V-Box corrosion** — Determined to nip this problem in the bud, meetings were held (the last one in mid-August) attended by various groups concerned conducting thorough investigations of all aspects of the subject. Based on this investigation, the Quartermaster Corps has made certain changes in the instructions covering the fabrication of solid fibre V-boxes. These are summarized as follows in a letter sent by Albert W. Luhrs, Consultant of the Weatherproof Fibre Box Group to the various interested groups:

"The following points are basic requirements to be complied with immediately in the manufacture of all solid fibre V-boxes for Quartermaster Corps canned goods:

"1. Solid fibre V-boxes for canned foods, made from combined board, any of the plies of which are laminated with starch and formaldehyde-containing resins, must be made with at least one, and preferably two, asphalt barriers. If only one barrier is used, it must be as close as possible to the cans and in any event must be the innermost adhesive line. The second asphalt barrier should be the outermost adhesive line.

"2. The moisture content of the combined solid fibreboard at the time it is made into boxes must not exceed 12 per cent, based on dry weight.

"The use of ammonium chloride as a catalyst is no longer prohibited when one or more asphalt barriers are used, but the Quartermaster Corps would like those manufacturers who have changed from ammonium chloride to ammonium sulphate to continue to use the latter material."

Early in August, very shortly after the corrosion problem of tin cans in V-boxes was first discovered, a meeting of the Weatherproof Fibre Box Group was held, at which no time was lost in appointing a committee to study the data presented at the meeting and to consider the results of experiments still under way. This committee consisted of Dr. E. L. Gustus, O.Q.M.G., War Department; J. E. Killinger, Penick & Ford; Albert W. Luhrs, Consultant; C. H. Pottenger, American Cyanamid Co.; B. W. Scribner, National Bureau of Standards; and L. V. Taylor, American Can Co. Meeting at Georgetown, S. C., in mid-month this committee was augmented at the request of the Quartermaster General's Office by C. H. Carpenter, Kieckhefer Container Co.; R. A. Diehm, Container Corp. of America and G. T. Henderson, War Department. L. J. Waldron of the National Bureau of Standards was present as alternate for Dr. Scribner.

High spots in the discussions were disclosure of ammonium chloride content in the rust found on cans, indicating the desirability of changing to ammonium sulphate as a catalyst in fabricating V-boxes. There were also reports that can rusting had been found to occur almost entirely, if not entirely, in boxes made without asphalt barriers. Dr. Gustus reviewed previous recommendations that ammonium chloride not be used as a catalyst and all boxes be manufactured with asphalt barriers. Also, since the moisture content of some boxes had been found to be quite high and since such high moisture conditions undoubtedly contribute to the corrosion of cans, Dr. Gustus had also recommended that the moisture content be not over 12 per cent and that the boxes be cured for a six-week period before use.

Reports of numerous tests to determine the cause of the trouble were presented in great detail. These were made on boxes fabricated with various materials and produced by a number of different box manufacturers. Tests were also made to determine the reaction of various substances on tinned plate and reports were made of the experiments conducted by the National Bureau of Standards.

As a result of the exhaustive study and reports, the committee reached the conclusions which later took form in the modified requirements as recommended by the Quartermaster General's Office. It is not the intention, however, to let the matter drop. The committee is planning to follow through on other tests, particularly "to determine the identity and the corrosion provocative tendencies of volatile materials in the various boxboards and in the various components entering into the manufacture of such boards. Several members of the committee will conduct experiments on cans treated with various solutions which will tend to prevent corrosion in atmospheres containing acid substances."

• **New Container Division Head**—Roswell G. Mower has resigned as Director of WPB's Container Division. New director is E. F. Tomiska of New York, who has been Deputy Director of the Division.

• **New Pulpwood Coordinator** — A new coordinator whose chief duties are to synchronize production of pulpwood and distribution of all pulpwood products was announced by WPB last August 21. He is Harold Boeschenstein, director of the production controls bureau of WPB. He will act as pulp and paper coordinator with the primary purposes of determining policies to be followed and will coordinate the functions of three WPB divisions: Pulp and Paper, Containers and Printing and Publishing.

• **More on Grade Labeling**—OPA announces the repeal of grade labeling requirements which were written into a score of Maximum Price Regulations with the expectation of protecting the buyer where ceilings depend on the quality grade of an article. The action was taken in obedience to the Taft Amendment to the Commodity Credit Corporation Act, prohibiting OPA from requiring grade labeling. Substitute provisions for the compulsory grade labeling requirement include the following:

1. Marking grade on the invoice—optional
2. Descriptive label required to indicate contents but without reference to grade
3. Retail ceiling of rayon hosiery based on grade must be shown, but requirement of grade marking is eliminated.

Products affected by the changed regulations include meats, butter, eggs, canned fruits and vegetables, dry edible beans, peanuts, bed linens, anti-freeze, rubber heels, southern pine lumber, prime grade hardwood logs, kraft paper, fine papers and burleigh tobacco. Manufacturers of these products should apply to OPA for revised Maximum Price Regulation.

Sellers are still permitted to mark or label the grades on articles if they wish to do so, but the actions in no way affect the requirements in some regulations that retail ceiling prices be posted. "Descriptive labeling" is not prohibited by the Taft Amendment and where practicable may be substituted for the labeling or marking of grades.

• **Box Veneer Supply Provided For** — Box veneer for wirebound boxes needed for export shipments has dropped about 20 per cent in recent months while the need has risen by about the same amount, according to WPB's Container Division. Conservation Order M-343, issued August 19, permits producers to make unlimited quantities of box veneer.

• **Tung Oil Conservation** — No alkyd resins containing tung oil (China Wood Oil) will be authorized for general use on or after September 1, 1943, the Chemicals Division of the WPB has announced. Exceptions will be made in the case of resins required for food container and closure linings and for insulating varnishes. In addition, resins containing tung oil will not be denied for aircraft coatings (Spec. AN-TT-P-656A) until November 30.

• **Glass Order Amendment** — Unlimited glass container quotas for shortening, higher glass container quotas for coffee, and certain other quota adjustments are provided in an amendment to Limitation Order L-103-b issued August 24th. The previous quota for packaging shortening was 65% of 1942. The coffee container quota was raised from 65% to 75% and the base period changed from 1942 to 1941.

• **New Deputy Director Container Division** — Russell Gowans, former president of the Western Crown Cork & Seal Corp., who has been assistant director of Container Division, WPB, moves into E. F. Tomiska's office as Deputy Director of that branch.

COMPARATIVE PAPER AND PAPERBOARD PRODUCTION WPB—4009

GRADES	1942 FIRST HALF (Tons)	1942 SECOND HALF (Tons)	1943 FIRST HALF (Tons)
TOTAL ALL GRADES	**8,843,278**	**7,871,298**	**8,398,594**
Newsprint	492,060	473,810	416,570
Groundwood, etc.	347,553	276,094	289,982
Book	928,982	782,724	819,407
Fine Papers	556,063	493,867	511,958
Wrapping Paper	1,376,078	1,129,224	1,140,766
Special Industrial	95,038	85,226	89,795
Sanitary	419,135	392,437	413,259
Tissue	93,797	77,299	81,243
Absorbent	30,942	33,367	39,595
Building Papers	397,065	512,946	424,709
Other Paper	18,402	2,984	436
Boards	4,088,163	3,611,320	4,170,874
Container	1,974,575	1,754,126	2,006,376
Tube	81,030	83,645	137,391
Folding	909,746	799,155	1,004,415
Set-Up	557,225	407,737	436,805
Cardboard	30,732	23,231	26,368
Building Boards	405,068	452,097	453,814
All Other Boards	129,787	91,329	105,705

IT'S AN OLD STORY... BEARS REPEATING

A few years from now we'll look back with amazement on the substitutes we are using in packaging.

How, we will ask, were we able to do so much with so little... and so quickly?

The answer for which all industries must take credit is: ingenuity. When the going got tough and materials got short, famed American ingenuity was there to stretch and contrive effective substitutes.

May we call on our customers to take a bow with us for four important wartime developments: the *paper closure, paper sifter can, paper lipstick* and *paper compact*? They deserve at least as much credit as we.

NEW YORK CITY - PHILADELPHIA - BOSTON
ST. LOUIS - ATLANTA - GEORGIA - CHICAGO
CLEVELAND - CINCINNATI - NEW ORLEANS
MEMPHIS - MINNEAPOLIS - KANSAS CITY

DANVILLE, CALIFORNIA (Near San Francisco)
A. G. Spilker P. O. Box 126, Telephone: Danville 27
LOS ANGELES, 1709 West 8th St.—Tel. EXposition 0178

CANADIAN DIVISION: Dominion Paper Box Company, Ltd. 469-483 King Street, West, Toronto 2 Canada

F. N. BURT COMPANY, INC.
500-540 SENECA STREET, BUFFALO, N. Y.

Mobile piano for overseas canteens

The tinkle of a piano drifted out through the flimsy bamboo walls of the canteen. Sergeant McCauley and Private Jones stood outside in the hot night for a moment and just let the American tune soak through their ear drums.

"That isn't a radio," observed Sergeant McCauley, "that's the real thing. Some guy's playing a piano."

"Lord, what will they think of next?" said Private Jones. "Darned if they haven't shipped us jungle boys a piano."

Thanks to the Research and Development Branch of Military Planning of the Office of the Quartermaster General in Washington, many of our men in the far-flung outposts of the fighting fronts as well as those in camps in the United States will be listening to songs played on Army Field Pianos. These pianos are being shipped to canteens overseas, wherever our men gather for recreation.

Packaging methods, intelligently applied, have made this possible and the shipping case developed gives promise of numerous postwar applications. The specially created piano and a special wooden case were designed by the Research and Development Branch of Military Planning. Both the pianos and their cases are now being manufactured by the Weaver Piano Co., Inc., of York, Pa., the designers of the piano.

Above. The piano in the box with the bench in position for playing. Below. The piano without its shiping case, showing the folding bench attached to the piano with brackets on the lower panel.

The box in which the piano is shipped is lined with asphalt laminated paper which keeps out water, moisture and heat. The box is bolted together with carriage bolts instead of being nailed or screwed. There are metal pods in the back of the piano to receive the lag screws which hold it in place in the box for shipping. By reason of these lag screws, the piano can be removed and repacked in the box repeatedly with the assurance that the lag screws will always hold.

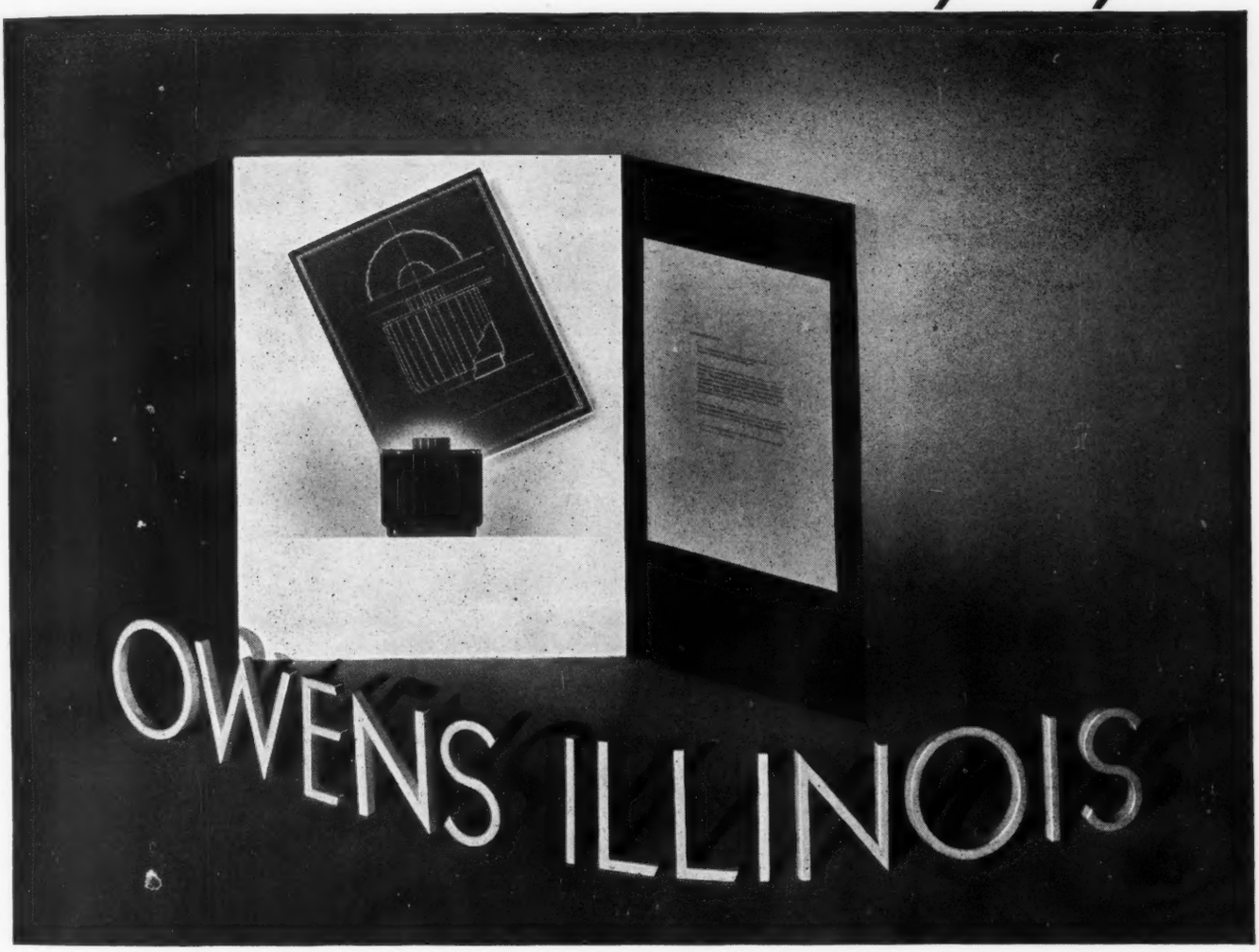
There are hardwood guides bolted inside the box so that the piano can be readily re-inserted in the box in correct position to receive the lag screws in the back. The front of the box—both the top and the bottom sections—is hinged into position and when closed for shipping the front is fastened with hasps. Also, the front of the box is so designed that it can be used as a platform when the piano is played, without removing the piano from the box. When the piano is to be removed or re-inserted in the box, the bottom part of the front can be lifted out, so as not to be splintered or defaced in moving the piano in and out of the box.

The box is very sturdy and will stand up under the extremely unfavorable conditions of shipping in wartime. The case is particularly suitable from a utilities standpoint, because the only tool required to remove it from the box or to repack it, is a wrench for the lag screws that hold the piano in the box. All the rest of the work necessary to remove the piano from the case and repack it is a matter of moving the piano into the box and closing the hasps. Weight of the box is about 275 lbs.

The piano itself has created a great deal of interest and comment. It contains less than 10 per cent of metal by weight. This means that it contains less than 37 lbs. of metal. So far as the Weaver company knows, it is the first piano to be designed with so little metal. Plastic plywood made with resin bond has been substituted for metal at every place where this could be done in the piano without sacrifice of utility. The company has applied for a patent for this specially designed mobile piano. The pianos, benches and boxes are finished in olive drab to conform to army specifications. The weight of the piano and bench without the box is approximately 393 lbs., so that the weight of both piano and box is about 668 lbs. Dimensions of the case for this 88-note piano when shut are $64^1/_2$ in. by $30^3/_4$ in. by 47 in.

Related pieces of furniture and shipping containers have gained popularity with the war, (*Ccontinued on page 108*)

INSIGHT INTO TOMORROW'S *Plastic Packaging*



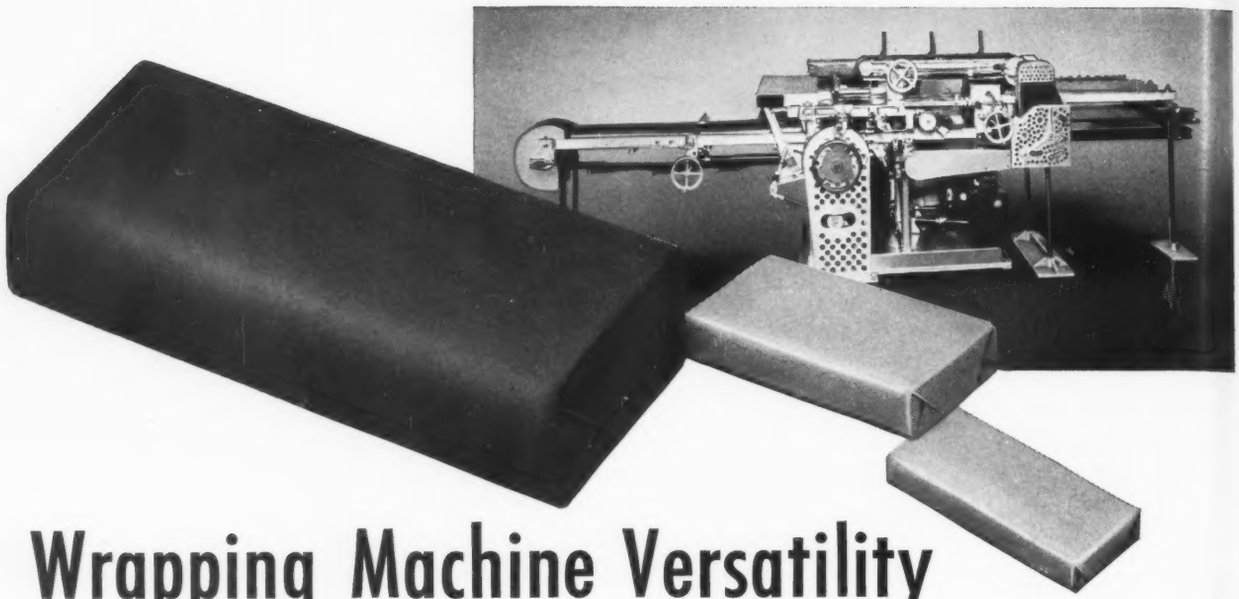
Today, we are devoting our plastics production to products which are most needed in America's wartime economy. But our obligation to industry demands that a group of design-engineers focus sights for the limitless possibilities of post-war plastic packaging.

Broad experience supervises the blueprints under consideration at our Packaging Research Division. Owens-Illinois has spent over half a century designing and manufacturing glass and metal containers. Closely allied has been the skilled molding of plastic parts for all types of containers. High priority production today includes *complete* packages of plastic.

This reservoir of packaging knowledge deserves to be imprinted indelibly on your 194X package planning board.

OWENS ILLINOIS

PLASTICS DIVISION . . . OWENS-ILLINOIS GLASS COMPANY, TOLEDO, OHIO



Wrapping Machine Versatility

A big advantage in WAR wrapping

War presents its problems with extreme suddenness — and in a multiplicity of forms . . . This is especially true of war-time packaging. Sizes have to be changed . . . New types of products must be turned out . . . Volume suddenly expands . . . And new wrapping materials frequently have to be used.

Only the most versatile type of machine can meet these conditions satisfactorily, as many a manufacturer has discovered.

Our FA model, illustrated above, is an outstanding example of what we mean by versatility . . . The packages shown contain different types of gauze bandage made by the Millburn Mills, recent purchasers of this machine. The smallest package measures 3″x1⅝″x½″ and the largest one 9″x4½″x2 9/16″, which gives you some idea of the extremely wide range of sizes that can be accommodated on this machine. But this is only one advantage offered. The machine can readily be adapted to any type of wrapping material, as well as to various forms of sealing, whether by heat or adhesive. And it can handle the most difficult types of products — from a soft, flexible pad of bandage to a carbine clip with irregular shaped ends.

This is no sudden war-time development. We appreciated the advantage of flexibility years ago — and built all of our machines with it in mind.

Military supplies wrapped by our machines

PACKAGE MACHINERY COMPANY, Springfield 7, Mass.

NEW YORK CHICAGO CLEVELAND LOS ANGELES TORONTO

Mexico: Agencia Comercial Anahuac, Apartado 2303, Mexico, D.F.
Argentina: David H. Orton, Maipu 231, Buenos Aires
England: Baker Perkins, Ltd., Peterborough
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PACKAGE MACHINERY COMPANY

Over a Quarter Billion Packages per day are wrapped on our Machines

TECHNICAL SECTION

- MACHINERY
- PRODUCTION
- TESTING

Technical Editor
CHARLES A. SOUTHWICK, JR.

Two-tube belt-type bag packing machine used in sugar refinery. Operator is shown filling valve bag.

Multiwall bags—Properties and Modern Uses

Adelmer M. Bates was not in the bag business. Back in the Gay Nineties he was a salt salesman. He could sell more salt than his firm could pack, a situation that has made him the father of the multiwall bag.

In 1942, about 1,000,000,000 of these containers were shipped to American industries for the packaging of approximately 300 different commodities. Many times they can double for steel and fabric. They are surviving the hazards of wartime transportation. They can even be loaded with molten compounds at 450 deg. F.

Bates' inventions, patented in 1898, were the now familiar Valve Bag and the machinery designed to fill it. Soon his company was filling salt bags so fast, the commercial world began to take notice and more and more packers cast their eyes enviously at paper bags as a solution for mass production in their various industries.

But these early bags were not multiwall bags. They were single wall, made of salvaged rope stock from ships and docks and construction jobs. They were used widely for flour, cement, plaster, lime and other building materials. Such containers were about the only kind of heavy-duty paper bag used before World War I. At that time the shortage of shipping cut off supplies of hemp and salvage rope became scarce. Bag makers began experimenting with kraft mixed with rope fibres, sisal and jute. Eventually they made bags entirely of No. 1 kraft.

Such sheets were heavy and inflexible. More experiment showed that two walls or plies of lighter weight kraft sheets combined with corn, tapioca or potato paste made a duplex bag—stronger and with greater flexibility. Soon the advantages of more plies were apparent, but not until further development of machinery for making bags of more than two

plies did the development get into its present stride. This happened about 1925. Until that time all of these bags were pasted satchel bottom type. Then a method of sewing the ends was discovered which made it possible to combine a number of sheets.

This was the real beginning of the multiwall paper bag as it is known today with the many combinations of sheets to meet each specific requirement of the more than 300 products packaged. Since 1935, the numbers of these bags used has tripled and the list of products includes chemicals, building, materials, foods, animal feeds, clothing, drugs, fertilizers, seeds, fuel, explosives, cleaning compounds and many others.

The modern multiwall bag is usually made with from three to six walls of kraft paper, depending upon the weight, density and physical characteristics of the product they are intended to carry. There is a possibility they may be made up to eight plies in the future. Each ply is arranged in tube form, one within the other, so that each bears its share of the burden. Greater flexibility and strength are obtained by using several walls in relatively light basis weights rather than one wall of heavy paper. A further advantage to the user is lower cost. In the case of the multiwall bag, each ply can be treated specifically to meet its requirement, whereas if a single-wall bag were used, the entire sheet would have to be treated for each requirement. It is less expensive to color, say, a 50-lb. outer sheet, moistureproof a 40-lb. inner ply, treat another 40-lb. ply for wet strength than to process a 130-lb. basis weight single-wall sheet to meet all three requirements. Adding color to the heavy sheet, alone, would cost nearly four times as much as it does to color a 50-lb. sheet.

The average heavy-duty multiwall bag is constructed usually of several sheets ranging in basis weight from 40 to 70 lbs. each (reckoned by weight of 500 sheets 24 in. by 36 in.). The most frequently used paper sheets are in the 40- to 50-lb. basis weights.

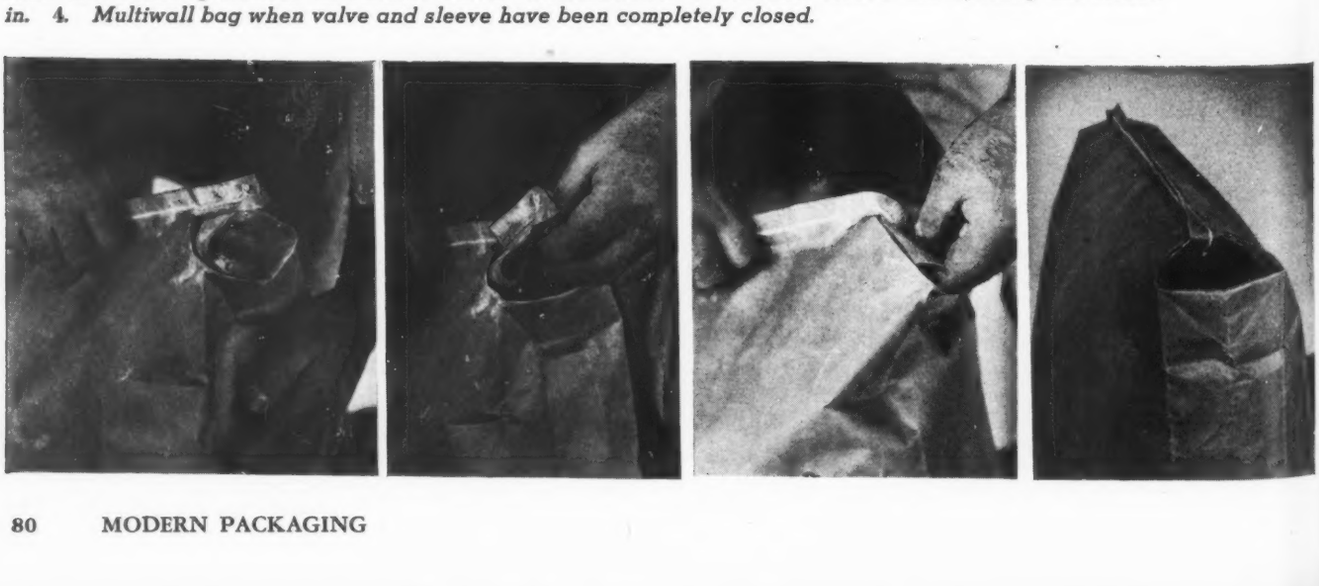
The multiwall bag is custom made. Size and construction cannot be made up in stock items because each product packaged has different requirements. Size depends upon the weight per cubic foot of the product to be packaged. A 100 lbs. of cement, for example, is not comparable with a 100 lbs. of feathers. The latter are so light that a bag large enough to carry a 100 lbs. would be impractical. Construction depends upon the physical and chemical characteristics of the product and on the circumstances of shipment and use. Some products must be protected from loss of moisture in the product; others must be provided with barriers to keep moisture from being transmitted into the bag. Some products must be packed in a bag that can withstand high temperatures. Others must be provided with walls that will not crack at low temperatures. Sometimes all of these requirements and more must be incorporated in the construction of a bag for just one product.

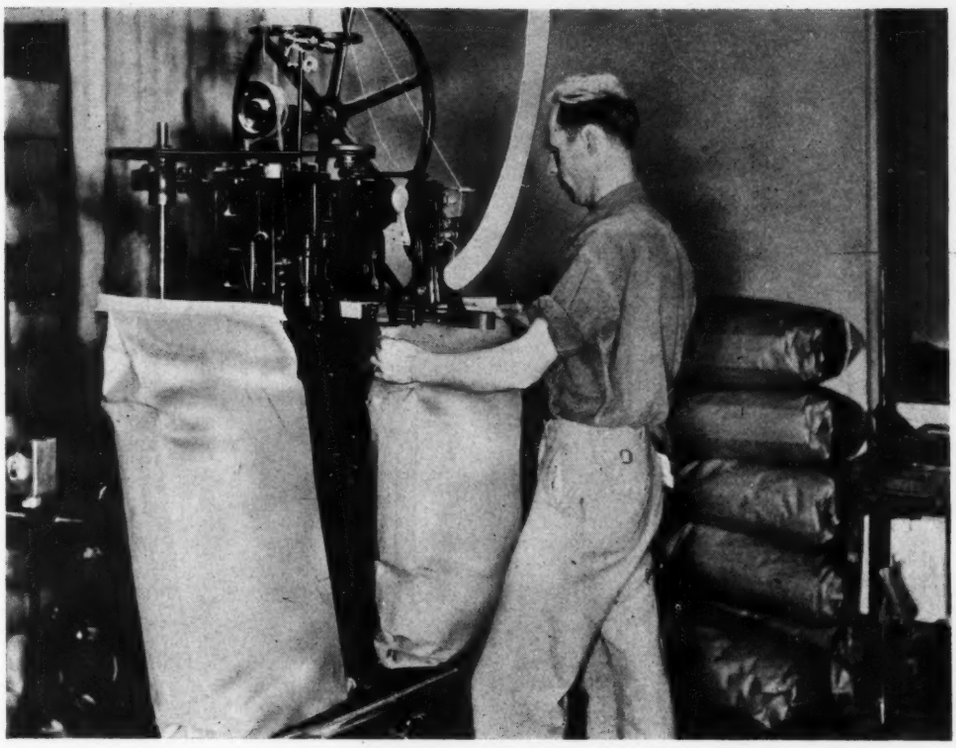
Before suppliers of multiwall bags recommend a bag suitable for a particular product, it is helpful for them to have such data as the following:

1. Name of the product.
2. Characteristics of the product to be packed.
   a. Fineness.
   b. Flowing qualities.
   c. Weight per cubic foot—(1) loose, (2) settled.
   d. Temperature when packed (if hot liquid, the cold flow properties of solid).
   e. Percentage of moisture.
   f. Required protection against moisture loss such as is likely to occur in normal atmospheric conditions.
   g. Hygroscopic or deliquescent properties.
   h. Chemical action on paper.
   i. Poisonous or dangerous qualities.
3. Present package used—(a) type, (b) cost, (c) weight per unit, (d) protective liners, coatings, etc.
4. Present filling, weighing and closing method.
5. Seasonal or year-round production.
6. Type of shipments in general use: carload, LCL, truck, barge, export, air, any other.
7. Conditions of handling.
8. Value per unit of product (lbs. or tons).
9. End use of product.
10. Special storage conditions.

Such data help to furnish a background to the technical department of a multiwall bag manufacturing concern for its work on the development of a satisfactory bag and packaging equipment. Usually, technicians and engineers work right in the plant of a prospective user to get a complete picture of a particular problem and to make tests of bags under actual conditions of use. Only after that, are they ready to suggest size, construction, closing, sealing and filling methods. From such study, they may determine which of the dozens of different sheets used for the plies will give the best performance.

Left to right.* 1. *Sewn valve bag, showing inner sleeve for added protection.* 2 *and* 3. *Pressure of contents automatically flattens and closes valve. Demonstration shows how sleeve and opening are folded in.* 4. *Multiwall bag when valve and sleeve have been completely closed.





Sewing equipment for applying bound-over tape and filter cord to open mouth multiwall bag. This type of bag is one of the most widely used.

They can recommend what special treatments, finishes, coatings and impregnations for these plies to provide:

1. Waterproofness.
2. Moistureproofness.
3. Vaporproofness.
4. Greaseproofness.
5. Resistance to chemical action.
6. Resistance to temperatures.
7. Resistance to gases and smoke.
8. Resistance to adhesion.
9. Resistance to infestation.
10. Resistance to sifting.
11. Protection against mildew and bacteria.
12. Easy emptying.
13. Resistance to scuffing.

One or two examples will show how paper bags have been successfully developed to solve the most difficult packaging problems.

Several years ago, a multiwall bag supplier was asked to design an economical, one-trip container for calcium chloride to replace steel drums because the latter were expensive, bulky to store and required extra bookkeeping.

Calcium chloride must be delivered dry and free flowing. It must be packaged at 205 deg. F. It is so hygroscopic that moderate moisture cakes it; so deliquescent that excessive moisture sends it into solution. To meet these requirements, a five-ply bag was developed, which does the job so successfully it is used more or less as a yardstick for comparing packaging problems with similar characteristics in greater or lesser degree. Three of the plies are kraft and the two inner ones are a special asphalt laminated sheet highly resistant to air-borne moisture and to capillary action.

The usual package for asphalt had been clay-coated steel drums. These take a great deal of metal and cannot be reused because they have to be destroyed to remove the solidified asphalt. Packaged at temperatures up to 450 deg. F., molten asphalt calls for a container that will resist this heat and, at the same time, have the necessary strength to cope with the cold flow characteristics of this material.

Molten asphalt is now being successfully packaged in a multiwall paper bag. A liner of natural kraft paper coated with a special clay and casein formula is performing this service. This coating will stand temperatures of more than 450 deg. F. and prevents the penetration of molten asphalt into the paper. The liner prevents the asphalt from sticking to the paper after it has cooled and tears away easily from the solidified material.

A brief description of specially treated sheets in general use for the plies of multiwall bags will give some idea of the types of materials that impart protective and tensile properties to finished multiwall bags.

Types of plies

Clay and casein coated sheets to withstand high temperatures have been previously described.

Two light weight kraft papers laminated with a continuous film of asphalt have exceptionally high water and moisture resistance qualities and are the best all-round moisture-resistant paper at relatively low cost. The melting point is approximately 170 deg. F. Asphalt can be obtained in higher melting points where absolutely necessary. However, such sheets are inclined to brittleness, particularly at cold temperatures.

High-sized and moderately high-finished papers are available as outside walls, particularly on fertilizer bags. They stand rain well. Other high finishes make the paper slightly slippery so that dust will not adhere to the surface. Tub-sized sheets are made for outside walls for application where scuffing is apt to cause heavy breakage. Wet strength sheets are specially treated to provide higher scuff and abrasion resistance, and are used as inner plies in bags for products packed wet to prevent the disintegration of paper. A good example of this use is the multiwall bag for potatoes.

Crepe kraft is used in the tape of sewn-end bags and for tuck-in sleeve valves. In some instances, it also has an advantage as one or more plies in the body of the bag.

Wax papers, treated with both paraffin and micro-crystal-

Right. Laboratory devices for testing multiwall bags for every kind of drop and handling treatment, more severe than anything they will get in actual use. Bags for OQMG were put through these tests. Below. Stored flat, the multiwall bag has great advantages in space saving.

line waxes, are used to give moisture resistance. These sheets have a wide range of temperature resistance, but should be used only within limits recommended as the result of careful testing.

Kraft paper, treated by immersion into an asphalt-wax combination, is not as moisture resistant as the asphalt laminated paper and transmits more moisture, but it also transmits less than regular untreated papers. Such a paper may also be treated to resist the penetration of grease.

Glassine is used as an inner liner to resist penetration of oils or greases that might ordinarily be absorbed from the bag contents by natural kraft and similar papers. Sometimes two glassine sheets are laminated together with a wax base adhesive for this purpose. Such a sheet is used as a liner in bags for such products as sweeping compounds. It also has high moistureproof qualities, but very hygroscopic materials such as calcium chloride will dehydrate the glassine and cause it to shrink and become very brittle.

Cellophane, pliofilm, metal foil and parchments are also used for special protective purposes and in the construction of multiwall bags are usually laminated to one of the plies, depending upon the requirements.

Arrangement of plies from inside to outside is usually determined by the requirements of the product and combinations may be in any order which will do the job best.

Generally speaking, heavy-duty multiwall bags are made in sizes to contain 25 to 100 lbs. The latter figure is about the largest quantity that can be carried. Linear measurements usually start at about 10 by 25 in. and increase to 20 by 50 in. with $^1/_2$-in. variations in length or width. Often density of product necessitates such variation. For example, lime bags of the same weight capacity may be 17 by 29 in. or 20 by 40 in., depending upon the density of the product, because some lime compounds are more dense than others.

Adhesives used between the plies are mostly of vegetable origin, although animal glues are occasionally used. Latex, before the war, was one of the best waterproof adhesives for this purpose. Reclaimed rubber glue has proved a satisfactory replacement for latex.

General types of multiwall bags are as follows:

The Valve Bag is factory closed—that is, the top and bottom are closed either by sewing or by pasting and one small opening is left in one corner. This valve serves to admit the material into the bag. The valve closes automatically and instantly because of the internal pressure of the contents of the bag as soon as it is filled and dumped on the floor, slide or conveyor belt. To insure against moisture penetration and sifting, and to give added protection against penetration of micro-organisms, the valve of the multiwall paper bag may be equipped with a "tuck-in" sleeve which is tucked into the valve as soon as the filling is terminated. Today, ends are often dipped for further protection.

Open mouth bags are factory closed only at one end; the other end is left open. This type of bag is usually filled from a hopper. The bag is held in position manually or by a bag-holding clamp.

Open corner bags are sewed bottom bags. The open mouth is partly closed by sewing, an intermediate variety between open mouth and valve type bag. Open corner bags are often used for packaging commodities which are liquid when poured hot into the bag, but which harden (*Continued on page 108*)

EYES RIGHT...

Eyepieces of Eastman Acetate Sheet—for goggles and gas masks—provide good "seeing" quality and a high degree of protection.

To serve well, a man must see well . . . whether he's driving a tank into combat over there . . . or controlling traffic during a realistically staged "gas attack" over here . . .

Many tank drivers and other ground forces, and civilian defense volunteers are protected by and see well through eyepieces of Eastman Acetate Sheet—tough, transparent, and having exceptional optical clarity.

Because it is so very tough, and so highly transparent, Eastman Acetate Sheet has been given many another wartime job. Encasing identification badges and passes, it not only preserves them, but makes them tamper-proof. It protects maps at the fronts, and working drawings in plants here at home. Used in more efficient filing systems, it helps speed up and safeguard wartime paper work. And Eastman Acetate Sheet has many other important government assignments.

★ ★ ★

WHEN you get around to thinking about postwar packages, make a note that Kodak's Transparent Packaging Laboratory, now solving problems affecting wartime uses of transparent sheeting, will once more be at your disposal . . . Chemical Sales Division, Eastman Kodak Company, Rochester 4, N. Y.

EASTMAN ACETATE SHEET

ATTRACTS • PROTECTS • SELLS

Performance specs versus material specs

*by Major Robert R. Melson**

Should package specifications be written to leave the method of accomplishment to the discretion of the producer or should exact detail of the material to be used and the method of assembly be satisfied? Major Melson, a leading authority on military packaging, discusses his ideas on this much discussed question in the accompanying article.

A specification is a description of a material or package given in sufficient detail so that suppliers can make a product which will do a given service performance as required by the procurement agency. When a packaging specification is to be prepared for a given product, there are a number of points which require consideration:

First, the military requirements must be known, as, length of storage, conditions of storage, including temperature, exposure to the weather and the amount of rough treatment that it may receive. Methods of distribution effect the size and weight of the unit and the desirability of a reclosure feature. The importance of an item to the troops, its monetary value and its availability affect the factors of safety employed. There may be other special requirements, such as resistance to war gases, ability to float, ability to fit a pack board, and other particular requirements.

Second, the commodity to be packaged must be examined for its properties of hydroscopicity, greasiness, tendency toward oxidation, ability to pick up odors, abrasiveness, tendency to sift, density, etc.

Third, the economics of packaging must be considered from the standpoint of availability of packaging equipment and packaging materials, the speed of packaging, the hand work required and whether unit or gross packages are to be employed. Finally, the specification must be written to apply to more than one supplier.

Methods of wording specification

There are two common methods of wording a specification. One is by describing the requirements which the finished product must fulfill, thereby leaving the method of accomplishment to the discretion of the producer. This is called a performance specification. The second method of wording a specification is to describe in exact detail the materials to be used and the method of their assembly. The latter type of specification places the responsibility for the design of the package on the author of the specification and only the responsibility for proper execution is placed on the producer. This is known as a material specification.

By the very definition of a performance specification, the ultimate objectives of a specifications are stipulated. Therefore, from a theoretical viewpoint, this would seem to be the most desirable type of specification. However, practical considerations somewhat temper this viewpoint.

Performance specifications require that a product be defined in terms of its performance. This in turn requires a multitude of standardized methods of test. These test methods will vary from package to package depending upon specific requirements and on whether the particular test

* Q.M. Corps; Officer in charge of the Packaging Branch of the Subsistence Research Laboratory of the Chicago Quartermaster Depot.

applies to inner packaging, overall packaging or to a single film which provides the actual protection for the contents.

As a matter of interest, we will list a number of the subjects on which performance tests would be required on a relatively simple specification:

Resistance to water vapor
Resistance to water
Resistance to grease
Ability of package to withstand handling at room temperature and when hot and cold
Resistance to scuffing
Resistance to corrosion
Resistance to insect infestation
Resistance to tear
Resistance to war gases
Tightness of package
Blocking
Rigidity
Volume
Weight
Color
Odor
Discoloration of product
Contamination of product
Adherence of product to wrap
Odor and water resistance of adhesives

Standard methods of test for many of the above subjects are not available and the difficulty of interpreting a single test in the terms of the performance of completed packages is difficult and open to some question. If completed packages or cases were employed for test purposes, it would require a large quantity of product for testing before the packages or cans could be proved to meet the specifications. The carrying out of these tests would require large laboratory testing facilities on the part of the packer, the material producer and the Army.

With a performance specification, the burden is placed on the producer, many of whom are unprepared to accept this responsibility. It has been the experience of the writer that where performance requirements of materials were specified, the producer usually returned to the Army for approval of each specific item in order to avoid having to accept responsibility for meeting performance requirements. For a specification of this type to function properly, the packer is required to have a well-equipped laboratory, a full understanding of the Army requirements and an adequate knowledge of materials and construction required to fulfill these various specified requirements.

Performance specs

The advantages of a performance specification are that it allow the utmost flexibility in the use of materials, the utmost flexibility in the use of machinery, permits the greatest use of personal initiative on the part of the producer and the chief advantage is that a product is obtained that meets both military and economic requirements, provided the proper performance tests are specified and provided these tests are properly met.

The disadvantages of a performance specification, as mentioned, are that a large number of standardized tests are required and the employment of a large number of testing laboratories necessitated. For the latter reason, this type of specification would be unfair to many small companies having only limited laboratory equipment. In addition, the majority of those in industry were unprepared in December 1941, to carry out a job based on performance alone. This statement might be challenged. However, as seen by the writer, a cross section of the industry's understanding of packaging subsistence items for world wide distribution at the start of the War was not a picture to inspire confidence. Fortunately, the panorama has now largely changed because of the diligent efforts on the part of industry and because of their keen desire to acquire a clear understanding of the Army's special requirements.

A material specification is or should be written only after examining a large number of packaging materials and packaging methods and selecting the most promising, judging mainly from performance tests (not necessarily standard) as listed earlier in this paper. After testing packages made with chosen materials and methods, the better ones, which meet military and economic requirements, are described in detail in the specification. If a large number of alternative methods and materials are included, the specification becomes unduly wieldy and may result in difficulties with interpreting the specification. As a rule, the fewest packages are specified that will give every packer a chance to compete.

Material specs

The advantages of a material specification are that a tested and proved package is obtained. Inspection is simplified since the number of package types are limited, tests are simplified, material requirements can be controlled and anticipated. A satisfactory package can be developed with less laboratory work, since a specification can be written after investigation of only a limited number or types of packages. Duplication of development effort can also be avoided. From a personnel standpoint, it is of advantage to avoid the continual flow of requests for the approval of the various packages.

Disadvantages are that a material specification limits the materials that can be used, limits the machines that can be used and limits to a degree the initiative of the packer. However, packaging suggestions are submitted daily by industry to the Quartermaster Corps and many of these have found their way into specifications.

In viewing the pros and cons of the subject, it can be seen that it is impractical to draft specifications entirely according to one or the other methods. A compromise between the two is a sensible approach and efforts are made to embody in present specifications the good points of each type.

Future trends for specs

As the technical knowledge of the industry advances, specifications can and will include more and more performance requirements. For example, the Quartermaster Corps Specifications contain a number of performance requirements at the present time and the trend is toward their more general application. Currently, performance requirements are included in certain specifications as to bursting strength, tear resistance, grease resistance, water tightness, tightness of seals, retention of strength over creases, water vapor permeability, water resistance of adhesives, sizing of paper and boards and resistance to abrasion. Performance requirements are being considered as to resistance to damage by rough handling at low temperatures and at room temperature for inclusion in future specifications. A movement toward performance specifications is diefinitely underway and the performance tests required to a limited extent at the present time may be expected to find a wider application.

You can help to standardize testing methods

★ ★ ★

Every manufacturer of packaged products has to predetermine in some way the performance of containers and container materials used to protect those products from the time they leave the factory until they reach the user.

Many companies have developed their own methods for such testing. In many respects these tests are to prove similar results, but so far there is no standard testing procedure in the packaging field comparable with that in other branches of technical endeavor. For a long time, package technicians have felt the need for such standards. This has become more apparent with the exacting requirements for packaging material for shipments to war zones and with the increasing use of flexible packaging films. It will be equally important in the postwar period when such materials may be used for vacuumized packaging.

At the Packaging Institute Banquet in April, Joel Y. Lund, President of the Packaging Institute, announced the formation of a committee to standardize testing methods on packages and packing materials.

The committee and its chairman, Charles A. Southwick, Jr., recently sent a bulletin to members enlisting their cooperation in obtaining detailed descriptions of methods used in performing package and package material tests, suggestions about performance levels and of any tests which should be included, but are not mentioned in the outline of plans. On the committee with the chairman are F. S. Leinbach, formerly of Riegel Paper Corp., now Deputy Director, Containers Branch, WPB, and W. H. Graebner, Chief of Technical Dept., Menasha Products Co.

The aim is to provide eventually a working manual on standard testing methods for users of packaging materials.

Success of this undertaking depends on the cooperation of everyone in the packaging business. The committee is counting on the assistance of every technician of the industry. Only by a comprehensive study of information and experience from hundreds of sources can workable standards be written. The material the committee wants is as follows:

I. Package Testing

Facts and experiences concerning the accelerated storage of packages to evaluate them for:

A. Moisture gain or loss.
B. Greaseproofness.
C. Water-proofness.

Please give the complete method used and a description of your storage equipment.

Also, information concerning the physical testing of packages, such as compression, tumbling, abrasion, impact, etc.

II. Package Material Testing

How the following properties tests are made and ideas for a standard procedure:

A. Water vapor resistance.
B. Greaseproofness.
C. Water-proofness.
D. Air (and/or gases) resistance.
E. Strength of heat seals and of ply lamination.
F. Static and dynamic folding and their effects on strength and other functions (such as A, B, C or D).

Replies should be sent to the Chairman, Testing Committee, Packaging Institute, Inc., 342 Madison Avenue, Room 830, New York 17, N. Y. To assist the committee in obtaining this, perhaps a fuller explanation of what and why this material is wanted will be helpful.

The most useful and reproducible method of package testing is by an accelerated test in a controlled atmosphere and this method has been generally accepted. This means a cabinet or room which will operate constantly at a set temperature and humidity. The temperature is usually set well above normal room levels from 90 deg. to 110 deg. F. The humidity may approach 100 per cent or may be very low depending upon the composition of the products. In any case, the storage conditions are such that accelerated changes occur in the product. However, the rate of acceleration must not be so great that package failure or product spoilage occurs so rapidly that it cannot be easily measured and evaluated. These two factors, the design and operation of storage equipment and the degree of acceleration of package tests, are of major importance for the three kinds of package tests mentioned in the bulletin.

The first heading, "Moisture Gain or Loss," covers the majority of package testing because moisture effects are the commonest cause of package failure. For a product which gains moisture in storage, such as a cocoa beverage powder for example, some technicians have selected 100 deg. F. and 90 per cent humidity as the desirable levels to give good acceleration of the test and produce spoilage of the product by caking. Most products fall into this class because it includes dry powders and all others with any degree of hydroscopicity.

Products which in themselves carry appreciable moisture and which are affected by its loss have been tested quite extensively at 100 deg. F. and about 40 per cent humidity. For example, shredded coconut becomes brittle, unusable and rancid if its moisture content becomes too low. Under these storage conditions, packages for this product, it has been discovered, can be safely accelerated and compared.

In each case, the temperature was chosen at 100 deg. F. because of the substantial rate of flow of water vapor either into or out of the package for most products. For example, a dry powder having a 50 per cent humidity in the package would have a water vapor pressure differential to an outside atmosphere of 90 per cent humidity of about 20 mm. at 100 deg. F. but only a vapor pressure differential of $7^1/_2$ mm. at 70 deg. F. Also it has been found that storage cabinets or rooms are less expensive and easier to control at temperatures appreciably above normal room levels.

Among the most important data to be gathered by this study is the establishment of a complete file of desirable levels of temperature and humidity for this phase of testing.

This requirement of temperature also applies to the testing of packages for greaseproofness and water-proofness. (Item "B—Greaseproofness" and "C—Water-proofness.") However, the proper humidity level will probably be a factor in the greaseproofness test although it is not important in the case of the test method for water-proofness.

A commonly used method for evaluating moisture gain or loss is to weigh each package to the nearest $^1/_{10}$ gram and place them in the storage atmosphere. The packages are then reweighed each week (or several days for small units) and plotted on graph paper. As long as the rate of gain (or loss) is constant, the contents have not gained or lost sufficient moisture to upset appreciably their equilibrium humidity. When this does occur and the rate of gain or loss (increase or decrease in weight per week) becomes smaller, the test is complete. In many cases, a package of each kind is taken out of the test periodically to be examined for the condition of the product. Obviously, the caking or any change in the product making it unusuable would mark the end of the test regardless of rate of moisture gain or loss.

This method has the advantage of eliminating many involved and tedious analyses of the moisture content of the product and is in effect a performance test based on the change in state of the product. Such a procedure or technique is well suited to most products carrying or affected by moisture but is not well adapted for those having components which are volatile or which are oxidized or in any way give changes in weight aside from the moisture change. This is only one possible method of evaluating packages for moisture gain or loss and undoubtedly many others are being used.

In the case of the accelerated testing of packages for greaseproofness or water-proofness, there is much confusion and no accepted method of determining failure. For greaseproofness, that is the penetration of the oils or fatty components through the package, the final test method should set some means of clearly defining the test procedure and also a means of determining the basis of package failure.

A similar parallel exists in regard to package testing for water-proofness except that the test should be divided into two distinct parts. In one case, it is important to determine a package ability to carry a product containing free water, and in the other case, to determine the package ability to resist penetration and failure by water from the outside.

The bulletin asks for information concerning the physical testing of packaging and this is an entirely new field and one to which due importance must be attached in the future.

Outer containers such as corrugated and solid fibre cases, wooden and wire-bound boxes, etc., have been designed and manufactured according to standards set up from physical tests made in the laboratory. Most people have seen the large tumbling drums used in this work and much of this and similar case testing methods can be used by scaling down the equipment for packages. Perhaps some package laboratories have developed such methods and techniques, and if so, their experience will speed the writing of these methods.

The second part of the bulletin is devoted to "Package Material Testing" and lists six of the most important material functions for which standard tests should be available.

The first and of major importance is "a water vapor resistance" of a packaging material. This test is now being made in a variety of ways because of the lack of a standard procedure which is reproducible and precise. However, there is much activity in this phase of testing and unquestionably the replies to this bulletin will further the work of arriving at some final conclusion. The water vapor resistance can be defined as that quality of a material which governs its permeability to water, entirely in the vapor phase.

A similar set of definitions could be written to cover grease-resistance (proofness), water-resistance and air (or other gases) resistance of package materials.

In the case of tests for grease resistance and water resistance, the standards and the work by The Technical Association of the Pulp and Paper Industry (T. A. P. P. I.) should be of value. Unfortunately, the Tappi test for greaseproofness uses turpentine as a test solution and this reagent does not give a true index of greaseproofness for certain coatings and treatments which have been proved useful for many products. However, by using this technique, atmosphere control and a few oils or fats common to package products, a uniform method should be relatively easy to develop.

The air resistance of package material is an entirely new phase of testing made necessary by the introduction of plastic base films which readily heat-seal. Some of these films have been proved to have a zero value for air transmission and unquestionably more such films will appear in the postwar era. Films of this type will eventually be the basis of flexible (non-metallic) vacuumized packages as soon as suitable package-forming machinery is developed.

The method of testing package material for its transmission of air and other gases as described in Modern Packaging, July 1943, appears worthy of acceptance as a standard. However, other methods may be presented which have some advantages over the one mentioned.

The increasing use of heat-sealable coatings and films and the functional advantages accruing from heat-sealed packages require that some testing method be developed to evaluate such sealed seams and closures. Such a test would be the basis of any research to determine the optimum conditions of time, temperature and pressure for the production and use of heat-sealable materials. Since the strength of ply lamination is very similar, it should be possible to arrive at one test method and technique for both and this is suggested by grouping both together in the bulletin. Both these tests should be rather easy to develop since the major variables are preconditioning of the sample, temperature rate of pull and a prescribed means of holding or positioning the sample.

Item "F static and dynamic folding and their effects on strength and other functions" is new and important because it is a recognition of the need for determining the durability factor of package materials. It is well known that any creasing, searing, folding or other means of forming effect the physical strength of materials to a degree dependent upon their composition, thickness, plasticity, etc. This degradation can be expressed in terms of the percentage of reduction of tensile strength for example, of a sample before and after folding under controlled conditions and in a prescribed manner. It is obvious that such forming will also have an effect upon the water vapor, grease, water and air resistance of a material.

Too much reliance has been placed on the test of flat samples because any material undergoes some degree of creasing, etc., in being formed into a package. Some materials which show good functional properties in the flat test will degrade rapidly and will give lower values than a more durable material under the same degree of forming. The temperature, humidity and technique of this test will have to be carefully determined and the final test carefully compared to be sure that the test results are comparable to and a good index of the degradation which comes from commercial packaging practice.

Since the bulletin was issued the committee has received some excellent replies. But we want more of them. You can accelerate this program by sending your replies to the Packaging Institute.

Charles a Lauthwick J.

Wet strength paper is used widely for the plies of multiwall bags, particularly for products like potatoes which are packed wet, to prevent deterioration from water penetrating the paper. Photo shows bags being tested with 24-hr. water spray.

Melamine resins for wet strength paper

"Wet strength" is a property of paper that retains its toughness when the paper is saturated with water.

This property is extremely important today in papers used for military shipments and substitutes for other packaging materials, such as shipping containers that will not fall apart or scuff when soaked with water, paper bags used as substitutes for burlap and papers for wrapping vegetables and meats.

In the past, several materials and processes have been used to impart such property to paper: glue-formaldehyde, regenerated cellulose (viscose), urea formaldehyde, parchmentization and zinc chloride. All these treatments, however, require special equipment in the paper mill for application.

Recent discoveries have proved that the new melamine-aldehyde resins have unexpected characteristics in giving wet strength to paper without the addition of special equipment. This development is of particular interest to users of packaging supplies when specifying papers for purposes where a high degree of wet strength is essential.

Melamine compounds for paper treatment are received at the paper mill in finely pulverized white powder form. This product needs only to be dissolved in warm water containing hydrochloric acid and then added to the stock. The most satisfactory point of application for the resin solution is after all beating and other refining have been completed, but before going into the paper machine wire. This material has a particular characteristic which some other materials previously used for this purpose do not have. The melamine resin in acid solution is largely retained by the paper fibres so that it is not lost in the water of the paper-making process. Because of this fact, it can be added to the paper pulp before the sheet is formed without requiring modification of either machine or operation in the paper mill. The use of acid-melamine resin formula, it is claimed, does not endanger paper itself or paper mill equipment. The explanation is that the acid does not go with the paper but remains with the white water. Tests have shown that addition of these materials does not have a corrosive effect on the paper plant equipment.

The following test results show how melamine treatment of paper pulp imparts extraordinary wet strength to the sheet to which it has been added and at the same time greatly increases folding resistance of the dry sheet.

Cellulose fibres treated with not in excess of 3 per cent of the melamine resin colloid retained between 70 to 90 per cent of the added resin. The wet strength, as measured by wet tensile strength after soaking 16 hours, increased from almost nothing to 50 or 60 per cent of the original dry strength. Wet Mullen increased in about the same proportion, while the wet rub resistance (double strokes to wear through the paper) rose from an average of ten to several thousand. This latter property should be of interest in connection with the treatment of containers for such products as kitchen cleaning powders, where the container is often in contact with water.

Dry Mullen and dry tensile values were increased about 15 per cent. The folding endurance, instead of dropping, as is the case when wet strength is obtained by tub treatment, was materially increased, sometimes as much as several hundred per cent.

Aging properties of paper beater-treated with melamine resins were shown by the following results. Under accelerated oven aging conditions of 72 hours at 105 deg. C. (aging

OVEN AGING TESTS*—105° C.

Type of Resin	Applied at	Wet Tensile,† Hours Aged			Fold-MIT Hours Aged			Tear-Elmendorf-g., Hours Aged		
		0	16	72	0	16	72	0	16	72
Untreated kraft	...	0.5	1.4	1.9	223	219	152	84	79	75
Urea-formaldehyde	Tub	10.3	10.8	11.2	189	120	40	45	47	34
Melamine-formaldehyde	Tub	4.6	11.9	11.4	191	89	41	64	48	38
Melamine-formaldehyde + HCl	Beater	8.1	9.3	9.0	1035	834	461	69	72	54

* All tests made on bleached kraft handsheets with approximate basis weight of 50 lbs. (25″ x 40″—500).
† Wet tensile measured in machine direction on strips soaked 16 hours. Results expressed as pounds per inch.

test used by U. S. Bureau of Standards), the folding endurance of the beater-treated paper so aged was higher than that of the original untreated paper and was much higher than the tub-treated samples.

Tearing strength is lowered by all wet strength treatments, but the beater-treated paper shows less lowering of tear values than tub treatment.

As far as is known, any of the usual paper-making sizing materials and fillers may be used with the melamine treatment without deleterious effects. Experiments in which various types of dyes were incorporated with the melamine-treated stock showed changes in shade, strength and fastness properties of some dyes. In certain instances fastness to bleeding in hot or cold water was definitely improved. In other instances, decreased fastness to light was observed, usually proportional to the amount of resin used.

By considerable laboratory research and mill trials, it has been concluded that the beater treatment is effective on any form of cellulose fibre, although results are more noticeable when used with a strong pulp. A wet strength kraft sheet may have a dry tensile strength of 20 lbs. and a wet tensile of about 10 lbs. Groundwood sheet given similar treatment showed a dry tensile of 2 lbs. and a wet tensile of 1 lb.

The following characteristics of other processes for wet strength treatment will help the user of such material or paper so treated to make comparisons of relative qualities:

Glue formaldehyde—has unpleasant odor which makes it unsuitable for papers in direct contact with foods. It requires special equipment and cost of ingredients is high.

Regenerated cellulose—This is expensive and requires very special equipment which is not suited to paper mill operation, although resulting product can be made with high wet strength, durability and greaseproof properties. Paper so treated is suitable for direct contact with foods.

Urea formaldehyde—imparts excellent wet strength both to rosin-sized and waterleaf paper when the paper web is impregnated with the resin solution and the resin subsequently cured on the paper machine driers. Until recently this was the most satisfactory method of applying wet strength resins to paper. It limits the use of resins, however, to those mills which have special application equipment or processes.

Parchmentization—is usually applied to light weight stock, requires special equipment, is expensive, but imparts high wet strength and greaseproof properties. It makes an excellent food wrap.

Melamine-formaldehyde—Fold resistance is increased over that of untreated paper. Dry tensile and bursting strength are increased moderately, but definitely. The wet strength properties of the treated papers are much more permanent when stored at high temperature and humidity than wet strength properties imparted by urea-formaldehyde resins. Water resistance of rosin-sized papers is increased slightly by this process. Retention of clay fillers has been improved in some instances. Although tear resistance may, in some cases, be reduced slightly, the amount of drop is less than the loss from tub-sizing processes which have been examined. Application is simple and the cure rapid. The dry resin is stable and therefore may be kept as a stock item.

Melamine is being made in increasing quantities and is available for essential civilian and military uses. In many instances, the additional dry strength obtained from melamine beater-treated papers, it is said, could permit the use of lighter weight papers.

Credit: Melamine resins produced by American Cyanamid Co.

Reference

Charles S. Maxwell, "Use of Melamine Resins for Beater Wet Strength," a paper presented at TAPPI Convention, February 16, 1943.

EFFECT OF ADDING RESIN BEFORE OR AFTER REFINING*

Length of Beater Treatment (Full Load), Min.	Length of Morden Refining, Min.	No Resin Added		Resin Added Before Morden			Resin Added After Morden		
		Fold, MIT	Wet Tensile†	Resin, %	Fold, MIT	Wet Tensile†	Resin, %	Fold, MIT	Wet Tensile†
0	0	2	1.0	1.5	24	2.7	1.4	18	2.9
15	0	28	2.0	1.7	264	5.1	1.5	522	7.0
15	2	114	2.4	2.2	1074	7.8	2.0	1148	10.2
15	5	576	2.9	2.4	1177	7.6	2.1	1141	11.7
15	15	1537	2.7	2.4	1517	6.6	2.3	2160	15.8
15	30	1762	2.5	2.3	3181	5.3	2.4	3233	14.4

* All tests made on bleached kraft handsheets with approximate basis weight of 50 lbs. (25″ x 40″—500).
† Wet tensile measured in machine direction on strips soaked 16 hours Results expressed as pounds per inch.

Makeshift packaging line

In foreground is wax-coated sleeve containing ampoule. Label, carton and container represent successive steps in the operation.

This is a story of a makeshift packaging line—doubtless one of many that have been evolved during this abnormal period. It is significant that the people who develop these makeshifts are overly modest about them. The individuals and the companies who are responsible for them seem to shun any publicity and appear to be ashamed that their devices are not finished machines.

In the opinion of the editors of Modern Packaging, *however, these makeshifts rank among the proudest achievements of American ingenuity in a time of stress and shortage.*

Do our readers agree with us? And do they know of any other cases that in the telling would be helpful at a time when adaptation is the order of the day?

Write us about such instances and we'll endeavor to present the full story. Your letter may result in an article that will help someone to solve a baffling problem.

When the Lambert Pharmacal Co. was invited to bid on the packaging of "Item No. 91120—Iodine Swab $1^1/_2$ cc. Alcohol 44–50% Mild Tincture Iodine, U. S. P. XII," the invitation was accompanied by a typical government specification. Everybody who has seen government specifications knows that they are dry, uninteresting, matter-of-fact. Sometimes they look as if they were very forbidding and difficult to understand. In reality, they are very definite and clear—anyone who devotes a little concentrated attention to them finds them not very difficult of comprehension.

Those specifications, however, don't tell *how* to do a job—they merely specify *what* is to be done. The Lambert people, of course, are interested in doing everything possible for the war effort, so they put some concentrated attention to work on

Left. Ampoules, remaining in place in shipping boxes, are filled with an accurately measured quantity of iodine by an operator who skillfully coordinates movements of hands and foot. Right. Resembling miniature test tubes, the filled ampoules are placed in position on a turntable and, emerging from the round trip, ride fully sealed, ready for the next operation.

the development of a production line to do this interesting packaging job. As always, the objective was fastest possible production at lowest possible cost consistent with doing the job properly. The order called for filling a glass ampoule with $1^1/_2$ cc. of iodine, sealing the glass ampoule, inserting it in a little knitted sleeve, labeling it for identity, coating it with wax within a definite distance of one end and packing in cartons, containers and wooden cases.

Most of these are familiar and comparatively easy operations, but for part of the packaging there was no existing mechanical equipment. The "rush" character of the order precluded devising, building and waiting for new machines which might have no usefulness after the war. There was no alternative—the production department of the Lambert Co. put on its thinking cap and devised makeshift lines that are now operating in their plants at St. Louis and Jersey City at the rate of approximately 25 ampoules per minute.

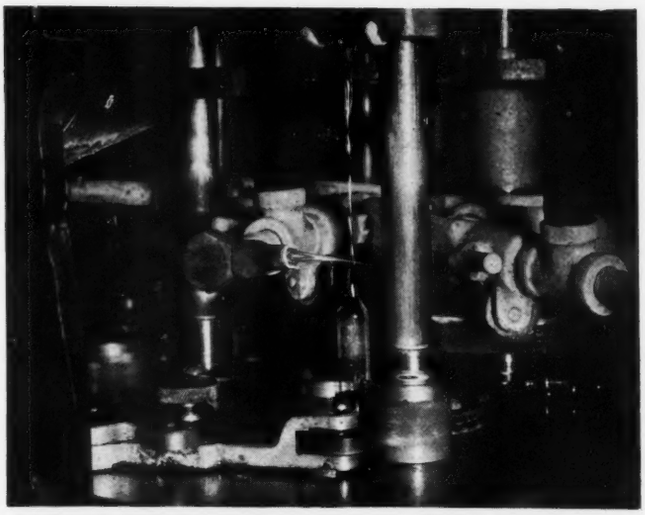
The glass ampoules, about $3^1/_2$ in. long by $^3/_8$ in. in diameter, reach the packaging line in boxes of 360. In these boxes they remain while being filled. The operation is performed by a single operator at a rapid enough rate to keep the whole line busy. The apparatus is a standard ampoule filling machine with a foot treadle that accurately measures the correct amount of iodine.

The boxes of filled ampoules are now carried to the ampoule sealing machine, likewise standard equipment, but of such an ingenious character that the observer would not pass it by in a hurry. This consists of a revolving platform with eight stations. This machine requires only one operator, who with one hand places the ampoule—filled but unsealed—in the jig in an upright position. With the other hand, she removes the sealed ampoule which has made the complete revolution on the turn-table and places it with several hundred others in the "tote box" or tray to go to the next operation.

One watches the circuit around the turn-table with keen interest. Little gas flame blow-torches move up and down to perform their jog and little fingerlike clutches remove the excess glass which slides down a chute into the discard. The blow-torch first applies a comparatively mild heat, so as to warm up the ampoule for the intense heat later required to form the seal. At the same time that this intense flame spurts from the little blow-torch, the jig holding the ampoule gives it a rotary motion and the fingers of the clutch exert an upward pull which draws the molten glass to a point and forms a perfect seal. The trays or "tote boxes" of filled ampoules now go to operators who insert them by hand in the little knitted sleeves, passing them on to the next operator who applies the paper identification label.

Now the ampoules are ready for the wax coating and this is done by a home-made mechanism that turns out about 40 ampoules per minute, including a cooling period of a minute and a quarter, passing them through a paraffin bath which is maintained electrically at 80 deg. C. The contraption makes the observer chuckle, but his (*Continued on page 112*)

1



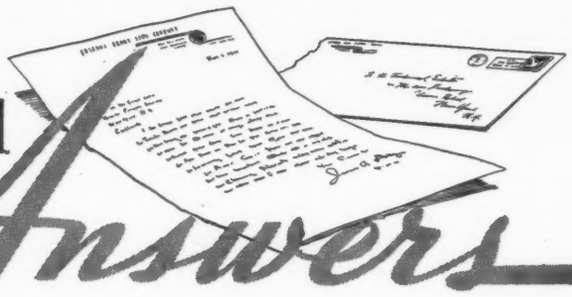
2

3

4

1. Mechanical fingers exert an upward pull while the holding mechanism twists the ampoule and, presto! the seal is formed. However, it must complete its ride before it is cool enough to handle. 2. Hand operations are required to place the iodine filled ampoules in knitted sleeves, following which the paper label is applied, also by hand. 3. Jaws of the "paper clip" holder open to drop an ampoule already dipped, while the fingers of an operator quickly place another in position as the clip closes. 4. A fan hastens the cooling process as the wax-dipped ampoules make the circuit on their chain conveyor.

QUESTIONS and Answers



How to keep the caps on

Question: We are using a small ($1^1/_8$ diameter by 3 in. high) all-fibre can—that is, a labeled fibre tube with die-formed slip-over ends. We received this package with the bottom end glued on and the top end is shipped loose and applied after filling. Our particular product is a mint candy which is carried in the pocket and is essential that the user can readily open the package and re-close it easily with some degree of retention. Our filling and closing operation is by hand and we are interested to know the proper technique of applying the closing cap so that it will not come off in shipment and will not be too difficult for the customer to open and re-close.

ANSWER: Obviously, it would not be practical to accomplish the results you desire by using the usual adhesives for making the end closure. For example, any aqueous adhesive or strong sealing thermoplastic would effect a closure so strong that it would be necessary to tear the cap or tube to effect its removal. It might, however, be possible to use the application of soft tacky waxy adhesive applied in the melted condition to the top outside surface of the tube in about an $^1/_8$-in. wide strip. This band of waxy material should be applied so that it has appreciable thickness and when the end is pushed down, the cap could be seated with a warm (not hot) seating cap-shaped die made of steel. This warm die should be close fitting enough on the side of the cap to effect a bond to the waxy layer. Since this wax mixture is very soft, it would readily allow the cap to be pushed up with the hand and would on re-closing give sufficient tack to prevent the end from falling off in the pocket.

Another possible solution would be to make these end caps adjacent to the filling operation so that they could be applied as they come from the cap press. In a drawing or forming operation of this kind, it is necessary to moisten or precondition the board so that the shell may be drawn without undue tearing or splitting of the fibre and the surfaces. When such freshly formed and slightly moist caps are fitted snugly down on the tube body, they will shrink upon drying sufficiently to effect a good closure. The process of drying could be accelerated by running a finished package under a warm pressure plate or belt or by having a series of warm close-fitting capping dies operating on a circular wheel. The quantity of moisture in the finished cap will be sufficiently low so that the mint candy will not be affected and the cap shrinking operation is so rapid that there would not be sufficient residual moisture to affect the product. It might be necessary, however, to reduce somewhat the size of the cap which is applied directly from the cap press, because the moist cap will be somewhat larger than the cap you have been receiving with the tube bodies. This small reduction in the size of the closing cap will insure sufficient shrinkage for a tight closure. Also, since there is no adhesive of any kind, the cap can be readily removed, and because of the good fit, there will be enough friction to prevent it sliding off too readily on repeated re-closures.

Address your questions to Charles A. Southwick, Jr., Technical Editor, Modern Packaging, 122 East 42nd Street, New York 17, New York.

Oiled fruit wrap

Question: We may wish to make an oiled fruit wrap. We have the stock we want to use and we have a method of applying the oil rapidly. We would like your advice as to the best type of oil to use. Also is it applied straight or is there some solvent to dilute it? Please describe the oil so we can get prices from several different oil companies.

ANSWER: Fruit wrap is usually treated with mineral oil of the grade referred to as "technical white oil." This means that the oil has been chemically treated during its manufacture to render it colorless and odorless. It is only slightly lower in quality than mineral oil for internal use and is available in different viscosities.

In fruit wrap such as that used with apples, the oil is present to help avoid refrigerator scald. While only a small amount of oil is necessary it must be evenly distributed throughout the paper to be most effective. This even distribution is accomplished through the use of a low viscosity or very "thin" oil. You should ask your suppliers for a technical white oil with a viscosity of 50 to 75 Saybolt seconds at 100 deg. F. A sample can be tried in your equipment and readily determine if you obtain the type of treatment you wish.

If you are not required to have an odorless paper you might try some of the light colored oils being produced by solvent refined oil of the same viscosity as suggested above to test at the same time you try the white oil. Direct comparison of the finished paper will tell you if you can afford to make the saving in cost which the use of the lesser degree of refinement permits.

Methods of application vary with the equipment available. However, it should not be necessary for you to dilute the oil with a solvent to obtain penetration and distribution. A solvent naphtha would be the best solvent from a cost standpoint but it would contribute odor when white oil was used and it would present a distinct fire hazard during use. A low viscosity oil such as is suggested should tend to distribute itself fairly well during storage after treating if this cannot be entirely accomplished during processing.

Waxed wrapping paper for bandages

QUESTION: We understand that the Medical Corps of the Army purchases a waxed wrapping paper for bandages. We could prepare such a paper with our equipment if we could find out the specification covering it and how it is bought. Could you help us get this information? *(Continued on page 112)*

MANPOWER IN PLANT OR BATTER

IS WHAT NUTRITION MAKES IT

Guns talk. They talk the only language the Axis understands. And they've got to outnumber and out-fire the enemy ordnance on every front—if this war is to be won as quickly as possible.

It takes mountains of rations to feed gun crews for armies that number many millions. And it takes a whale of a lot, too, to feed those huskies that are sweating day and night to get this ordnance out faster, FASTER—in the war plants throughout our land.

Much of this food has to be packaged and bottled. That is where Pneumatic Machines come in—to make nourishing and *properly-packaged* foods available on countless production and fighting fronts. Vital medicines, too, must be put up in enormous quantities by Pneumatic Packaging & Bottling Equipment.

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WASHINGTON REVIEW

by R. L. Van Boskirk

● **Amendment to M-104 Permits Rubber for Closures**—All limitations on the use of rubber, either synthetic or natural, as a sealing medium for closures for glass containers have been eliminated from Conservation Order M-104, as amended August 10 by the War Production Board, following advice from the Office of the Rubber Director that adequate synthetic rubber is now available for making closures for glass containers for food and other items. Rubber may now be used for the packing of any product listed in M-104. Probably the most popular synthetic to be used for sealing purposes in closures will be Buna-S since this type of synthetic can be compounded and used in almost the same manner as natural rubber.

Other changes in M-104:

Permission was granted to use "frozen blackplate" in small quantities for the manufacture of crown caps for beer and soft drink bottles during the third quarter.

Electrolytic tinplate may be used in the packing of mincemeat and maraschino cherries.

Cosmetics have been added to Schedule III of the order. Cosmetic producers may now make closures from specified types of metal such as used closures and cans, slitter or shear trimming. For the rest of this year, consumption of this metal by packers is limited to 25 per cent of their total for 1942. After January 1, 1943 the rate will be raised to 65 per cent.

Wines and distilled spirits are now listed in Schedule IV of the order. Bottlers of wines and distilled spirits will be permitted during the remainder of this year to use 25 per cent of the number of closures used in 1942. For subsequent calendar years, the rate will be 50 per cent.

Attention is called to the fact that permission to acquire "waste" material permitted for cosmetic, wine and distilled spirits closures from third parties must be obtained under Conservation Order M-325.

Disinfectants were added to the group of products including fungicides, insecticides and livestock solution sprays. Manufacturers and packers may now use blackplate to make closures for 130 per cent of the 1942 packing quotas.

To make Order M-104 a continuing one, references to the 1943 packing quota have been removed and "Calendar Year Packing Quota" substituted.

In commenting on this order, C. P. Kolstedt, Chief of the Glass Containers and Closures Section of WPB's Containers Division, says that the closure industry will be relieved of one of its big headaches by the removal of restrictions on the use of rubber. He says there is sufficient metal at the present time to take care adequately of all requirements for closures for home canning, commercially packed foods, drugs and pharmaceuticals, chemicals and household specialties for which provision is made in Conservation Order M-104, although there is some difficulty in securing sufficient reject blackplate for use in crowns for beverage bottles. It is difficult to ascertain the amount of reject blackplate that will be available at any time for the closure industry, because this is not a production item but is merely a throw-out of the manufacture of virgin blackplate. Mr. Kolstedt is optimistic, however, about the possibility of getting sufficient reject blackplate along with some frozen blackplate to take care of the allotted amount of closures for the beverage industry as provided in M-104—70 per cent of the amount used in 1941. Additional allotment is made for beverage production for the army and navy.

The general outlook for closures is good, according to Mr. Kolstedt, and he feels confident that there will be sufficient closures to meet all allowable demands as expressed in Conservation Order M-104.

It is believed that sufficient phenol and urea can be provided to take care of plastic closures needed for containers, provided that care is taken in conservation. WPB has assured the industry time after time that closures would be made available if no more than the minimum necessary amount is used per cap.

● **Paper Orders and Allocation of Paperboard**—The proposed amendment to M-290 will probably give WPB the power to completely allocate paperboard if deemed necessary. M-241, August 4, lifted production quota restrictions on paper and paperboard because restrictions were no longer necessary in view of changes made in allocation of wood pulp under amended order M-93. In the new program each producer will be encouraged to manufacture as much paper as possible from the wood pulp allocated to him, using substitute fibre wherever possible. Originally the order forbade the starting up of any mills closed since August 1, 1942. In the current amendment this provision has been shifted to the basis of paper machines and it now provides that any machine which has been idle since May 1, 1943, may not be started up without special authority from WPB. The purpose of this provision is to prevent invation of demand for wood pulp in the face of the curtailed supply.

Further restrictions as to inventory provide that prior to January 1, 1944, no person except a paper merchant may accept or deliver any grade of paper or paperboard, other than newsprint, which would increase the consumer's inventory above two carloads or 45 days' supply. After Jan. 1, the limitation is two carloads or 30 days' supply.

M-241-a, July 31, forbids manufacture of many paper articles and restricts tonnage for a number of converted paper products. The order is presumed to cover all processors or converters of paper.

The proposed amendment to M-290 will probably result in complete allocation for paperboard. Allocation was formerly limited to only the 25 per cent which was used for V-board. Under the new system it is hoped that allocations will not interfere with normal distribution unless priority ratings show that a manufacturer's containers are not being used for the most essential purposes.

Total U. S. Production of all paper and paperboard during the first half of 1943 aggregated 8,398,594 tons, compared with 8,843,278 tons for the first half of 1942, and 7,871,298 tons for the second half of 1942, Howard E. Whitaker, Deputy of the Pulp and Paper Division of the War Production Board announced.

● **Interpretation No. 1 to Limitation Order L-240, Issued July 24, 1943**—"Print paper" as employed in WPB Limitation Order L-240, covering print paper for newspapers, has been defined to include paper reclaimed wholly or partly from white or printed waste, as well as new paper made from virgin fibres. Reclaimed waste paper is not considered as ex-quota on the production level, as such paper may not be added to the tonnage

CROWN
is in this picture
TWICE

No, none of the more familiar Crown products of peacetime are on view!

But the canisters that hold the filter elements for those gas masks are a Crown wartime product . . . produced by the million in the Crown plant to safeguard military, naval and civilian users.

And those waterproof metal ammunition boxes are another Crown product . . . another example of the way all of Crown's facilities have been enlisted in the service of a nation at war!

Meanwhile . . . the less dramatic but no less necessary products . . . cans in which to pack food for fighting men and for the home front . . . cans for the essential products which can not be successfully packed in other ways . . . continue to roll from Crown's production lines! Crown is doing double duty these days!

CROWN CAN COMPANY, New York · Philadelphia. *Division of Crown Cork and Seal Company,* Baltimore, Md.

★ ★ ★ ★ ★

CROWN CAN

which may be produced under Canadian and United States orders limiting mill operations. Consequently, it cannot be considered as ex-quota on the consumption level. It must be included, together with new paper, in computing a publisher's permitted usage under the order.

● **Waste Paper Salvage Campaign Extended**—Paul C. Cabot, director of WPB's Salvage Division, and Arthur G. Wakeman, director of the Pulp and Paper Division, have announced the extension of the Waste Paper Salvage Campaign to all states east of the Mississippi River and to several states beyond.

Early in the year, the Salvage Division resumed collection of old containers, old kraft paper or brown paper in localities where waste material dealers were available to handle it. About a month ago, the Waste Paper Drive was extended to include all grades of paper. Because of the avalanche of waste paper collected in the 1942 drive, the continuing salvage effort has been progressing more slowly to allow for adequate collection by a greatly reduced force of waste material dealers. Salvage Division representatives are watching the progress of collections of paper closely to avoid any glut on local markets. Collection campaigns will be suspended in areas where an over supply is indicated.

● **Fibre Drum and Allocation Program Changed**—Conservation Order M-313, as amended, went into effect August 2, making several changes in the reporting requirements and delivery-authorization periods under the fibre drum allocation program. Fibre drum manufacturers now report bimonthly, instead of monthly, on their prospective production and deliveries of fibre drums. Allocation authorizations issued by WPB on the basis of those reports will cover a two-month period, rather than a one-month period as heretofore.

This amendment also extends the restrictions of the original order M-313 to apply to companies which produce fibre drums for their own use. No such company may use their fibre drums except as authorized by WPB.

● **Metal Edging Permitted on Returnable Cases**—Conservation Order M-261, as amended, was issued August 2 by WPB. According to the terms of the amendment, reinforcement metal edging on returnable cases such as are used for delivering bottled beer, bread, etc., is not classified as metal strapping and is exempted from the restrictions of the order (Strapping for Shipping Containers), since it is desirable, tending to prolong the life of the returnable delivery boxes.

● **OPA Amends MPR No. 187 Again**—By Amendment No. 5 to Maximum Price Regulation No. 187, effective August 1, 1943, OPA authorized another two-month extension of the provision that raw material costs in MPR No. 187 (Certain Paperboard Products) must be computed at levels no higher than the maximum prices in effect for these raw materials on March 31, 1943.

● **Pulp Made from Sawdust**—The Pulp and Paper Division of the War Production Board has been advised that a Southern pulp mill engaged in the manufacture of pulp for making paper has succeeded in utilizing sawdust when faced with a shortage of pulpwood. The company reports that although the pulp made from this raw material could not be classified as No. 1 grade of kraft pulp, it was found superior to many grades of repulped waste paper. It was used in the manufacture of nine-point corrugating paper and other grades of paper and paperboard, where cleanliness and top strength qualities were not necessary.

● **Manufacture of Jute Products Increases**—A substantial increase in the production of jute products during the second quarter of 1943 was reported at the July meeting of the Jute Spinners Indutry Advisory Committee of the War Production Board and government officials, and possible methods of assuring further production and distribution of jute products to meet both military and essential civilian needs were discussed.

● **Production of Wide-Mouth Glass Containers**—Amendment No. 2 to MPR 382 (Wide Mouth Glass Containers), effective July 28, was issued by OPA in cooperation with the War Production Board's and the War Food Administration's programs to provide more glass containers for packing food. This amendmend provides that high cost producers who have not previously manufactured wide-mouth containers will be able to recover their total costs of production and sales up to 15 per cent over the established dollars-and-cents ceilings set by MPR 382. Factory costs and freight may be recovered, but not sales costs up to any amount where total costs exceed 15 per cent over established ceilings. These allowances should serve to encourage the entrance of new producers into this manufacturing field.

Manufacturers are required to file applications indicating costs and certifying that the higher prices in excess of the ceilings will not be passed on to the ultimate consumers of the commodities packaged in the containers.

The large-scale packaging of vegetables and fruits in glass and the absence of reserve capacity in the West have resulted in a more acute shortage in the West than in the East. To relieve this shortage, OPA has liberalized transportation provisions so that eastern manufacturers may be authorized to recover actual freight in excess of the maximum amount customarily absorbed.

● **Wood Containers Standardized and Restricted**—Limitation Order L-232, as amended, directs the standardization of wooden shipping containers for dressed chickens and turkeys and permits 10 sizes following a standardization plan initiated by the Department of Agriculture after approval of the industry and the Bureau of Standards. Manufacturers may continue to make or assemble wooden chicken and turkey boxes, however, until September 30, from any wooden parts which were cut to size prior to July 30. And persons who buy ready-cut parts and assemble these boxes may continue to assemble non-standard parts until September 30, providing the parts were bought and received before August 15.

Order L-232, as amended, also restricts the use of wooden shipping containers for specified materials or products. It forbids their use for soda, ash and bicarbonate of soda except such materials already so packed. Their use for shipping juice or table grapes is limited to definite percentages of the quantity used in 1942.

● **Price Schedule to Encourage Salvage**—MPR No. 434 (Used Fruit and Vegetable Containers) provides a schedule of maximum prices for used wood, fibre or corrugated board fruit and vegetable containers—designed to encourage their collection and re-conditioning for re-use, which became effective July 26, 1943. Previously these used containers were priced under GMPR, which established as ceilings the highest prices sellers charged during the month of March 1942. The new maximums are higher than formerly, but in no case are they any more than 80 per cent of the maximum prices for new containers. Their present established levels were fixed in furtherance of the intensive campaign of the Department of Agriculture to encourage salvage.

● **Timber Production Project**—To help stimulate the output of lumber, veneer logs, pulpwood and other forest products urgently needed for war, a special Timber Production War Project has been launched by the War Production Board and cooperating agencies. The project is under the general direction of J. Philip Boyd, Director of WPB's Lumber and Lumber Products Division. It is administered in the field by the United States Forest Service.

● **MPR 187 Amended to Extend Time Limit**—Amendment No. 5 to MPR 187 provides for another two-month extension of the provision that raw material costs in MPR No. 187 (Certain Paper-

Mr. Slowey:

"Don't thank me. You bought it with your own odd lots of Bottles and Caps."

Miss Thomas:

"Yes. But if I hadn't found out you pay cash for obsolete and discontinued lots, I would still have had them lying around and would not possess this beautiful coat."

Miss Thomas had a few lots of discontinued and obsolete Bottles and Caps in her Stock Room. They were useless to her and were taking up good space. Then she found out that the Glass Container & Cap Outlet Company would pay cash for them. Now Miss Thomas owns a beautiful Fur Coat that she thought she couldn't afford and her Stock Room looks nice and neat with plenty of space for further shipments.

We will buy any odd, discontinued or obsolete bottles or bottle caps, either metal or bakelite, plain or lithographed, regardless of size or quantities. In fact, any kind of containers, including paper or metal cans, compacts and lipsticks.

Let us know what you have to dispose of and we shall contact you immediately.

GLASS CONTAINER & CAP OUTLET CO.

14 EAST 17TH STREET NEW YORK, N. Y.

board Products) must be computed at levels no higher than the maximum prices in effect for these raw materials on March 31, 1943. The time limit now extends to October 1, 1943.

● **Grade Labeling of Wrapping Paper Restricted**—Amendment No. 8 to MPR No. 182 (Kraft Wrapping Papers and Certain Bag Papers and Certain Bags), effective August 7, embodied the Taft Amendment to the Emergency Price Control Act of 1942, which restricts OPA from requiring grade labeling under certain conditions, and thus provides an alternative for manufacturers when selling No. 1 kraft wrapping paper, super-standard kraft wrapping paper, imitation kraft wrapping paper, and No. 1 unbleached kraft butchers wrapping paper. The manufacturers may state merely the grade of paper on the invoice when selling these designated types of paper instead of following the former single requirement of stenciling or labeling the grade on each roll or bundle.

● **OPA Again Amends Revised Price Schedule No. 32**—Amendment No. 6 to RPS No. 32 (Paperboard Sold East of the Rocky Mountains), effective August 18, 1943, permits a maximum variation of 5 per cent in the basic weights for the respective thicknesses of Fourdrinier kraft linerboards specifically listed in RPS No. 32. These linerboards are used primarily for the manufacture of corrugated and solid fibre shipping containers.

The net effect of this action will be to secure an additional number of square feet of material from every ton produced, without causing a deterioration in quality, since Mullen Test standards that have been in existence in the industry are now incorporated in the schedule.

● **OPA Must Approve Price Ceilings**—Producers of paperboard east of the Rocky Mountains have been reminded by OPA that they are required to apply to OPA for approval of price ceilings for any new grades or qualities of paperboard. Very few producers have filed applications for such approval and apparently are not following these provisions which are contained in RPS No. 32.

● **Enemy patents**—Seized as a result of the war and now in possession of the Alien Property Custodian, enemy patents have been made available to the operators of small war plants, according to Brigadier General Robert W. Johnson, Chairman of the SWPC, whose office has worked out the details with Leo T. Crowley, Alien Property Custodian. Up to now only larger firms have reviewed available alien patents and have applied for non-exclusive licenses under which the war effort and postwar development may be implemented. Small plants have been urged to take advantage of this opportunity and encouraged to apply to the office of the Custodian for an index of classified patents.

● **Corrugated and Solid Fibre Container Committee Officers Elected**—E. R. Hankins, president of the Hankins Container Corporation, Cleveland, has been elected chairman of the newly created Corrugated and Solid Fibre Container Industry Advisory Committee to OPA. P. A. Shilling, president of Waldorf Paper Products Company, St. Paul, Minn., has been named vice-chairman.

● **War Manpower Commission Amends Selective Service and Occupational Activity Bulletins**—Inclusion of mandrel-wound paper products, used in the packing of shell casing, and the cutting of pulpwood as activities essential to the war effort are among the more important of amendments to fourteen Selective Service Activity and Occupational Bulletins recently announced by the War Manpower Commission.

Mandrel-wound products and mandrel winding stock are added to essential activities listed in Bulletin No. 27, "Production of Pulp, Paper, and Materials for Packing and Shipping Products." Other additions include the production of: butcher papers, untreated and treated; fruit and vegetable wrapping tissues; pattern tissue; rope and jute; twisting and spinning; wrapping-machine finished and machine glazed; cable and electric insulation; twine; mesh cloth fabrics.

The definite inclusion of pulpwood cutting in Bulletin No. 7, "Forestry, Logging, and Lumbering," was made to clarify the status of these woodcutters. Hitherto pulpwood cutting had been included by interpretation among essential activities covered by Bulletin No. 7, and it also appears among "farm products" in Selective Service Local Board Memorandum No. 164, which provides for the classification of registrants engaged in agriculture. The production of pulp is included as an essential activity in Bulletin No. 27.

● **Cotton Linters**—A supply of cotton linters soon will be made available for sale in the open market for use in the bedding and upholstering industries, according to WPB. This will result from an amendment to Order M-12 limiting the purchase of cotton linters and hull fibre for use in the manufacture of chemical cotton pulp. Revision of Order M-12 was designed to allow the cotton linters producers maximun flexibility in oil mill linters operations and deliveries. Issued with the order is the first directive which calls for about 75 per cent of production for chemical use and 25 per cent for civilian use.

● **Strapping for Shipping Containers**—Conservation Order M-261 as amended August 2, 1943, restricts the use of strapping on shipping containers to 9 specified classifications. These include among others, wooden or fibre containers containing fruits, vegetables, meats, fish or poultry and wooden lard or butter tubs and wooden buckets or pails. Strapping is also allowed for closing fibre drums or hexagonal or octagonal fibre containers.

● **Protective Coatings**—To remedy the difficulties that have been experienced with the quality of paint reducing oil, Amendment 1 to Conservation Order M-332 has been issued, July 27. The new order makes it necessary for the oil or non-volatile content to be at least 65 per cent of the product. This is effected by requiring that oil represented to be "Linseed Replacement Oil" meet Federal specification TTO-371. The amendment also unfreezes wholesalers' stocks on hand before July 1.

● **Tea Chest Markings**—War Food Administration's tea industry food advisory committee has proposed a simplified plan of tea chest markings to replace a traditional English system now in use. The proposed system would be adopted by all tea exporting countries, with an individual geometric symbol—triangle, circle, square, etc., designating country of origin. Within the symbol, initials indicate grade and quality. Present range numbers and weights would be continued.

● **Labeling**—The requirement in the over-all, mark-up regulations that retail grocers who bought in bulk and then repackaged before reselling must show the grade on their retail packages, if it had been shown on the original package, was revoked. Retailers, however, are still required to post with their selling prices the grades of eggs sold by them at the place in their store where they are sold. Revocation was taken in Amendment 1 to MPR 422 and Amendment No. 1 to MPR 423.

● **Steel Drum Order Amended**—WPB has amended General Preference Order M-255. This amendment is concerned with rejects and seconds. A reject or second means any newly manufactured drum which cannot be used for the purpose for which it was intended, due to some defect in material or manufacture. On and after July 17, 1943, no manufacturer shall sell or deliver to anyone other than the Army, Navy, Maritime Commission or War Shipping Administration, any rejects or seconds in excess of $^3/_4$ of 1 per cent of his monthly production of new steel drums except pursuant to authorization of the WPB. Rejects or seconds may be sold to the extent herein stated without authorization, but only for an amount less than the unit price of the order or contract for which they were made and not in excess of any applicable maximum price regulation. A user may apply to the WPB on Form PD-835.

SIX WEEKS IN SALT WATER

Yet they'll know the kind of food in every can

Food is drifted onto the shores of war areas occupied by our troops in the cover of darkness or sunk from lighters in shallow water to be recovered by the fighting forces from the sea. Identifying the contents of the cans was a difficult problem until the resourcefulness of engineers from the Heekin Can Company developed an ingenious coding device that challenges the action of salt water for weeks. The Heekin Can Company, famous in peace time for its color lithography on metal, has turned all its resources toward helping win the war. Resourcefulness and ingenuity are going to be helpful to you when peace time competition comes again.

THE HEEKIN CAN COMPANY, CINCINNATI, O.

HEEKIN CANS *Lithographed*

WITH HARMONIZED COLORS

U. S. patent digest

This digest includes each month the more important patents which are of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at 10 cents each.

CARTON HAVING ATTACHED CARTON OPENER. R. L. Kaye, Newark, N. J. U. S. 2,323,335, July 6. A carton cutter comprising a pair of spaced guide plates, and secured thereto by means of bent-over tabs, said blade having a cuting edge extending between the two guide plates, one of the guide plates having a bead adapted to fit a groove formed in the exterior face of the carton.

CARTON. L. M. Kennedy (to Marathon Paper Mills Co., a corp. of Wisc.). U. S. 2,323,779, July 6. An integral blank for a carton comprising a plurality of side walls hingedly connected together along spaced fold lines and a flexible tear cord extending longitudinally along and in coinciding relation with one of the fold lines throughout the length.

CARTON. R. E. Petes, Jr. (to R. E. Peters, Sr., Saginaw, Mich.). U. S. 2,323,565, July 6. A carton with side and end walls, a top and a bottom, said end walls being formed with registered openings adjacent the bottom, a horizontal partition providing a transverse passage across said carton at the level of the upper edges.

LIQUID DISPENSING DEVICE. R. D. Champion and L. E. Fry, Los Angeles, Calif. U. S. 2,323,378, July 6. A liquid dispenser with tubular shank, the bore of said shank having an outlet communicating with the exterior of said shank with head mounted on one end of shank having a cavity with which to receive liquid detergent.

DISPENSING CARTON. K. J. Harwood (to International Cellucotton Products Co., Chicago, Ill.). U. S. 2,323, 395 July 6. A package comprising a stack of interfolded sheets, a box of rectangular shape enclosing said sheets.

CONTAINER CLOSURE. S. A. Bennett, Chicago, Ill. U. S. 2,323,443, July 6. A container with peripheral top bead, a cover having a flange extending over the bead and a closure ring having a skirt portion for engagement with the cover flange.

SEALING STRUCTURE FOR CONTAINERS. I. L. Wilcox (to Oswego Falls Corp., Fulton, N. Y.). U. S. 2,323,-505, July 6. A container whose top and body members are secured together along confronting surfaces by a strip of impervious sheeting material initially secured to one surface of one member coated with a substance permanently sealable to the confronting surface of the other member.

COLLAPSIBLE BOX. M. Kretchmer, New York, N. Y. U. S. 2,323,782, July 6. A box so constructed that upon folding forms a handle to facilitate carrying.

DISPENSING PACKAGE FOR ICE CREAM CONES. L. Pape and M. Weintraub (to Milko Cone & Baking Co., Inc., Chicago, Ill.). U. S. 2,323,841, July 6. A combined shipping and dispensing package for ice cream cones, being a rectangular cardboard container of elongated shape.

MARKER. W. R. Fowler, Jr. (to Hall Bros., Inc., Kansas City, Mo.). U. S. 2,323,663, July 6. A marker having a fold extending transversely through the center of a card forming flaps to overlie the inner and outer faces of a greeting card.

METHOD OF PACKING CONTAINERS. R. Guyer (to Waldorf Paper Products Co., St. Paul, Minn.). U. S. 2,323,-467, July 6. The method of packing a two part container having telescopically arranged upper and lower sections.

CIGAR ENVELOPING. J. A. Neumair (to International Cigar Machinery Co. a corp. of New Jersey). U. S. 2,324,017, July 13. A cigar enfolded transversely by a wrapper fabricated of sheet metal foil with an outstanding longitudinal heat-sealed seam constituted by contiguous matched marginal portions of wrapper.

CONTAINER. J. Reichel, Wynneswood, Pa. U. S. 2,324,237, July 13. A sealed and stoppered container comprising a body portion; a sealed, breakable portion; a neck having an inwardly-extending flange therein, said neck extending between said body portion and said sealed, breakable portion and a cap stopper of substantially uniform diameter positioned within said container.

CONTAINER AND END CLOSURE THEREFOR. J. Haycock (to Continental Can Co., Inc., New York, N. Y.). U. S. 2,324,387, July 13. A metallic end closure on a fibre container, said closure being formed to include an annular channel defined by a heel wald and skirt portions between which the end of said body is tightly clamped.

PACKING AND DISPLAY CASE. D. J. Snyder (to General Mills, Inc., a corp. of Delaware). U. S. 2,324,436, July 13. A packing case for cartons having a bottom, ends and sides, the ends terminating at the top in gables and a shelf hinged to the top of each side and having a back, a tray and triangular ends at the same angle as the gable so that the shelf is swung about the hinge through an angle of 180°.

DISPENSING DEVICE. C. S. Van Brocklin, Portsmouth, N. H. U. S. 2,324,441, July 13. The combination of a container having a screw threaded circumferentially grooved neck extending from an upper end thereof and a screw cap with retaining means.

METHOD OF MAKING RAZOR BLADE PACKAGES. R. Nadeau and A. Rothschmitt (to Club Razor & Blade Mfg. Corp., Newark, N. J.). U. S. 2,324,016, July 13. A method of wrapping razor blades comprising the moving of a strip of blade wrapping material axially to form pairs of end flaps and intermittently depositing razor blades on said moving strip.

CASE SEALING MACHINE. W. D. Kimball (to Standard-Knapp Corp., Portland, Conn.). U. S. 2,324,401, July 13. An elongated case support mechanism for performing a sealing operation on the flaps of a case with vertically movable carriage for supporting said mechanism.

CARTON SEALING DEVICE. J. W. Levely, San Jose, Calif. U. S. 2,324,405, July 13. A device for use in folding and sealing the bottom flaps of a carton as the carton is swung through an arc by the operator comprising a pair of opposed and parallel glue applying devices disposed in spaced vertical relation.

FILLING AND CLOSING MACHINE. C. T. Walter (to Industrial Patents Corp., Chicago, Ill.). U. S. 2,324,443, July 13. A machine for filling cartons and the like having inner liners by means of a continuously operable conveyor for feeding the cartons into the machine.

CONTAINER. J. Cereghino (to American Can Co., New York, N. Y.). U. S. 2,324,484, July 20. A hermetically sealed sheet metal container comprising a tubular body having a laterally extended flange at its outer end constituting a shoulder terminating in a hemmed edge.

CARTON CUP DISPENSER. W. E. Amberg (to Universal Paper Products Co., Chicago, Ill.). U. S. 2,325,214, July 27. A shipping container for a stack of nested cups consisting of carton with closing flap and when said flap is removed will permit cups to be dispensed through end.

UNTIL THE BIG JOB IS DONE . . .

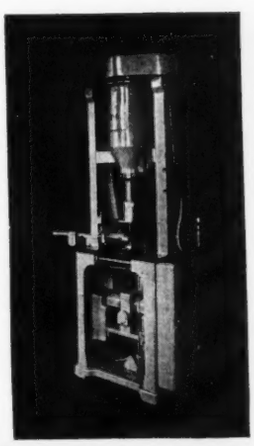
Lemon Juice Powder
(Synthetic)
Net wt. ¼ oz. (7 gm.)
A mixture of dried pure lemon juice with corn syrup, dextrose, citric acid, ascorbic acid and oil of lemon.
Contents of this package to be dissolved in one pint (¾ canteen cup) hot or cold water. Add sugar and stir well.
Packaged by
Elkhart, Indiana, U. S. A.

our thoughts . . . our efforts . . . our facilities are backing up our fighting men.

Because of this we are unable to give our usual service for repairs or for new equipment, but . . .

When "V"-Day comes and industry turns once more to producing for civilian needs, the experience and techniques we have gained in wartime stress will help you to fill your packaging requirements, more efficiently, more economically.

Millions of these Ration K packages (shown at left) are produced on Stokes & Smith Transwrap Machines. . . . Formed, filled and heat-sealed, in one continuous operation, to make a typical Transwrap job: a practical, low-cost package which fully protects the contents; seals in freshness and flavor; requires minimum material, time and labor to produce!

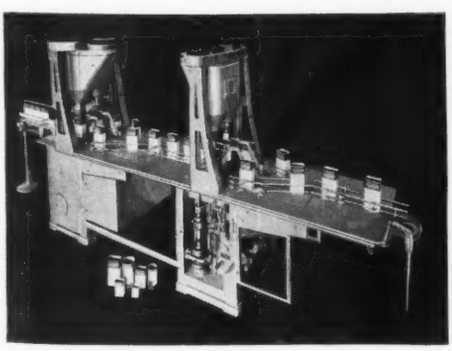


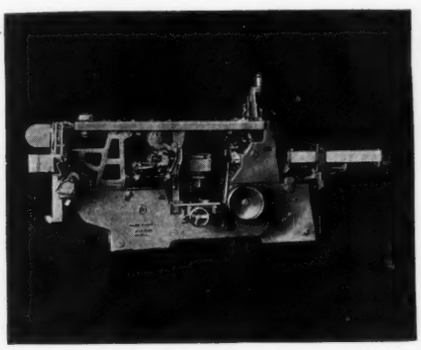
S&S

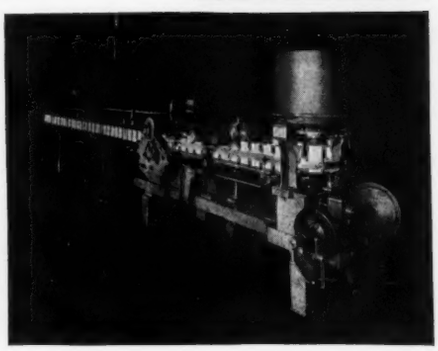
FILLING · PACKAGING · WRAPPING MACHINES

STOKES & SMITH CO., FRANKFORD, PHILA. 24, PENNA.

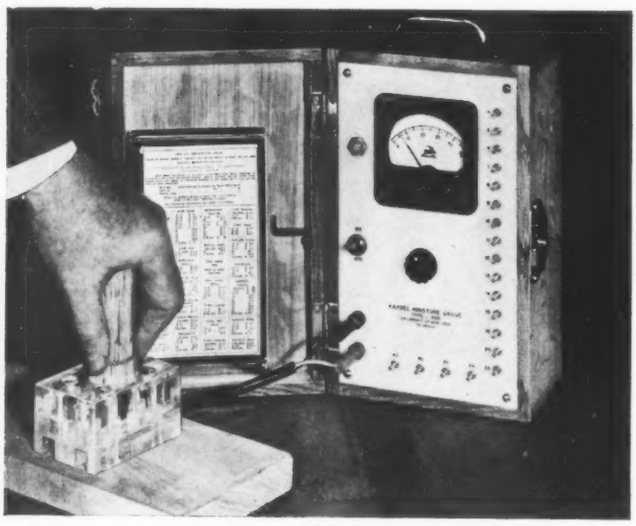
Shown counter clockwise — S & S Fully-Automatic Filling Machine — S & S Tightwrap Machine — S & S Carton Filling and Sealing Machine — S & S Semi-Automatic Filling Machine.







Equipment and Materials



MOISTURE GAGE

This gage indicates moisture content by direct substitution and comparison of material with built-in, unchanging, individual, moisture standards, in the same electrical circuit by means of the same contacting device and under identical conditions. The gage and the pressure contactor are both products of Hart Moisture Gauges, Inc., 126 Liberty St., New York City. The moisture content in plywood, veneer, leather, fabrics, pulp, paper and other sheet materials may be determined without puncturing or marring the material in any way. It can be carried anywhere for tests since the device is light and compact. It weighs less than 8 lbs. and is operated by dry batteries. The maker points out that it is also very easy to use, since all the user has to do is to press the contactor against the material to be tested and note a dial reading which indicates the material's resistance to the passage of a small electrical current.

NON-CRITICAL JAR RINGS

Jar sealing rings of non-critical materials that take the place of the rubber formerly used for this purpose are announced by the B. F. Goodrich Co. Ring at the left is made of Koroseal, a thermoplastic created by the company several years ago, while rings at the right are made from a vulcanizable linseed oil compound combined with various ingredients. Both of these rings are being used by food processors, according to the company, and they have proved satisfactory. Use of the new sealing rings, however, has been confined to packing products which do not rate rubber rings, but whose processors are able to obtain a fairly high priority rating for use of materials substituting for rubber. The rings will not be available for household canning purposes, it is reported.

RUBBER SUBSTITUTE

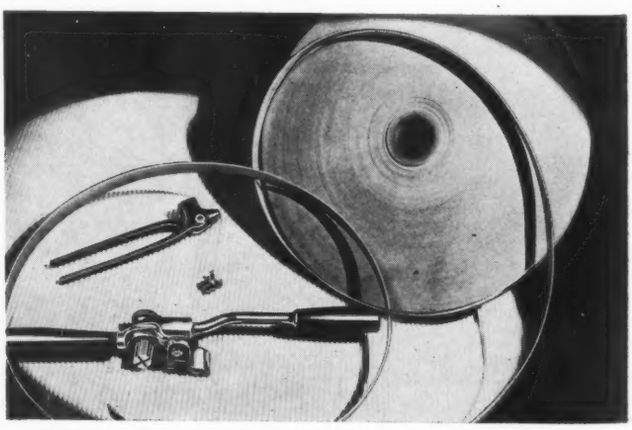
A rubber substitute that can be made in paint factories from vegetable oils and without use of critical materials, which is suitable for food jar rings, cements, stoppers, erasers, tapes and other civilian and war products, has been developed by the Sherwin-Williams Co., paint manufacturers. The company states that this product, known as Kem-Pol, is not a synthetic rubber, but rather a substitute, replacement and extender for natural, synthetic and reclaimed rubbers in those cases where lower tensile strength and elongation are permissible.

SIDE SEAL GLASS CLOSURE

A new side seal glass closure, developed by the Hartford-Empire Co., Hartford, Conn., uses a non-rubber gasket. It can be made, the company states, by the glass manufacturer without difficulty on a production basis and it can be handled efficiently by the food processor on high speed packing lines. The caps are all glass and so far have been made of amber and clear glass. The side seal finish of the jar designed for this glass cap is sufficiently higher than normal shoulder finishes so that it can be readily made on various types of existing forming machines. The gasket is automatically applied on the finish. There can be no glass to glass contact during the capping or later. The outer edge of the gasket engages the inner surface of the cap for immediate seal and as the cap is pressed in place, the gasket molds onto the finish.

SUBSTITUTE STRAPPING

A laminated fibre substitute for steel or wire strapping is being made by A. J. Gerrard & Co., 2700 Belmont Ave., Chicago. This material, the maker states, has unusual strength and can be used for strapping on all types of packages weighing 90 lbs. or less. It is water repellent and has only 1 per cent elongation which allows for selective tensioning. The manufacturer reports that this Stur-D-Strap has been tested and it has been found that it has a tensile strength of 13,500 lbs. per sq. in. In view of the recent government order, M-261, prohibiting shippers from using, except under certain circumstances, steel strapping on packages weighing less than 90 lbs., this strapping proves a timely substitute. The Gerrard company says that the fibre strapping may be used in all types of steel strapping tools.



GOODWILL is intangible, but as it underlies all business transactions, it may be expressed in terms of the Nation's gross dollar volume . . . or about 150 billions for 1942!

An asset of such tremendous value must be safeguarded . . . especially in wartime. Bombproof vaults and gilt-edge insurance offer no protection . . . only a buyer-seller appreciation of its worth can preserve it against the hazards of intolerance and misunderstanding.

The higher the value that can be placed on Goodwill, the greater is industry, prosperity, and employment. In these difficult days for American business, it would be well to keep in mind the true significance of this asset . . . regardless of how it is carried on the books.

NATIONAL ADHESIVES

DIVISION OF

NATIONAL STARCH PRODUCTS INC.

Main Office: 820 Greenwich St., New York

Chicago — Philadelphia — Boston — Indianapolis — San Francisco
and All Principal Cities

Plants and People

William E. Lynn has been appointed general sales manager of the Standard Cap and Seal Corp. of Chicago, in line with the company's expanding activities in the packaging field here and abroad. He will be in charge of both domestic and export operations.

Can Manufacturers Institute, Inc., has appointed Gordon Cole to the newly created position of director of advertising. He will have supervision over advertising and consumer education of the institute, and his appointment represents the initiation of extensive postwar planning by the can manufacturers. Preparation for the postwar period is the second and enlarged phase of activity that was started in 1941 when the research division of the institute undertook a study of the most important phases of the can industry. The study was conducted by the then newly established research division under direction of Dr. Miller McClintock. Results of this research have now been tabulated and analyzed and will form the factual background against which much of the postwar program will be built.

Gordon Cole

Interchemical Corp. and the administrative offices of several operating divisions and subsidiaries of the corporation have moved to the Empire State Bldg., 350 Fifth Ave., New York 1, N. Y. The New York Branch Office and Service Station and Eastern District Sales Office of Interchemical, however, remain at their present location, 636 Eleventh Ave., New York City.

Marco Chemicals of Philadelphia has transferred its business to Marco Chemicals, Inc., a New Jersey corporation, with Irving E. Muskat as president. Marco Chemicals, Inc. will be located at Sewaren, N. J.

Army-Navy "E" awards have been made to the following companies: To the Pittsfield Works of the Plastics Division of General Electric Co.'s Appliance & Merchandise Dept. for outstanding performance in the production of many hundreds of different kinds of plastics "bits and pieces" which later become essential parts of planes, tanks, ships and trench mortars.

To Sylvania Industrial Corp. for the second time. The corporation's Fredericksburg plant won a white star citation for meritorious services on the production front.

To the Pittsburg, Calif., plant of the Great Western Division of The Dow Chemical Co. "for high achievement in the production of war materials." This is the sixth such honor to go to various operations of the domestic production set-up of the Dow company.

Orders already at hand indicate a heavy demand for wrapping machines after the war, according to George A. Mohlman, president of the Package Machinery Co. In view of this fact, he has invited manufacturers to consult the company on postwar needs involving replacement of obsolete machinery or new types of machines for new types of wrapping.

Eugene H. Davis has been made manager of the Philadelphia branch of International Printing Ink to succeed the late John H. King. A. J. Pingarron, formerly with the Research Laboratories and for the past several years an assistant superintendent at the Brookyln factory under Hejnar Johnson, is being transferred from the Brooklyn factory to the Philadelphia branch where he will be in charge of the technical services in that area.

Basic Food Materials, Inc., has acquired a new and larger plant at 806–810 Broadway, Cleveland, Ohio, according to an announcement by Ray F. Beerend, president. An important addition to the company's facilities in the new plant will be a completely equipped laboratory.

To meet the increasing demands for its products, The Container Co. of Van Wert, Ohio, a division of Continental Can Co., Inc., has purchased a building from the Reading Iron Co. at Reading, Pa. The work of remodeling and the installation of equipment is under way and it is expected the plant will be ready for production some time this month.

Charles K. Lyle has joined the sales staff of Mundet Cork Corp. and will represent Mundet's closure division in North Carolina, Virginia, Maryland and Washington, D. C.

W. Godfrey Sturm has been elected vice-president of Edgar Steiner and Co., Inc., of New York City.

As a result of greatly increased war uses for Pliofilm, the Goodyear Tire & Rubber Co. has resumed production of the packaging material at its plant in St. Marys, Ohio.

The Oliver Machinery Co. of Grand Rapids, Mich., announces the appointment of Ralph C. Russell as assistant sales manager. Mr. Russell was formerly manager of Engineering Service for the Cellophane Division of E. I. du Pont de Nemours & Co., Inc.

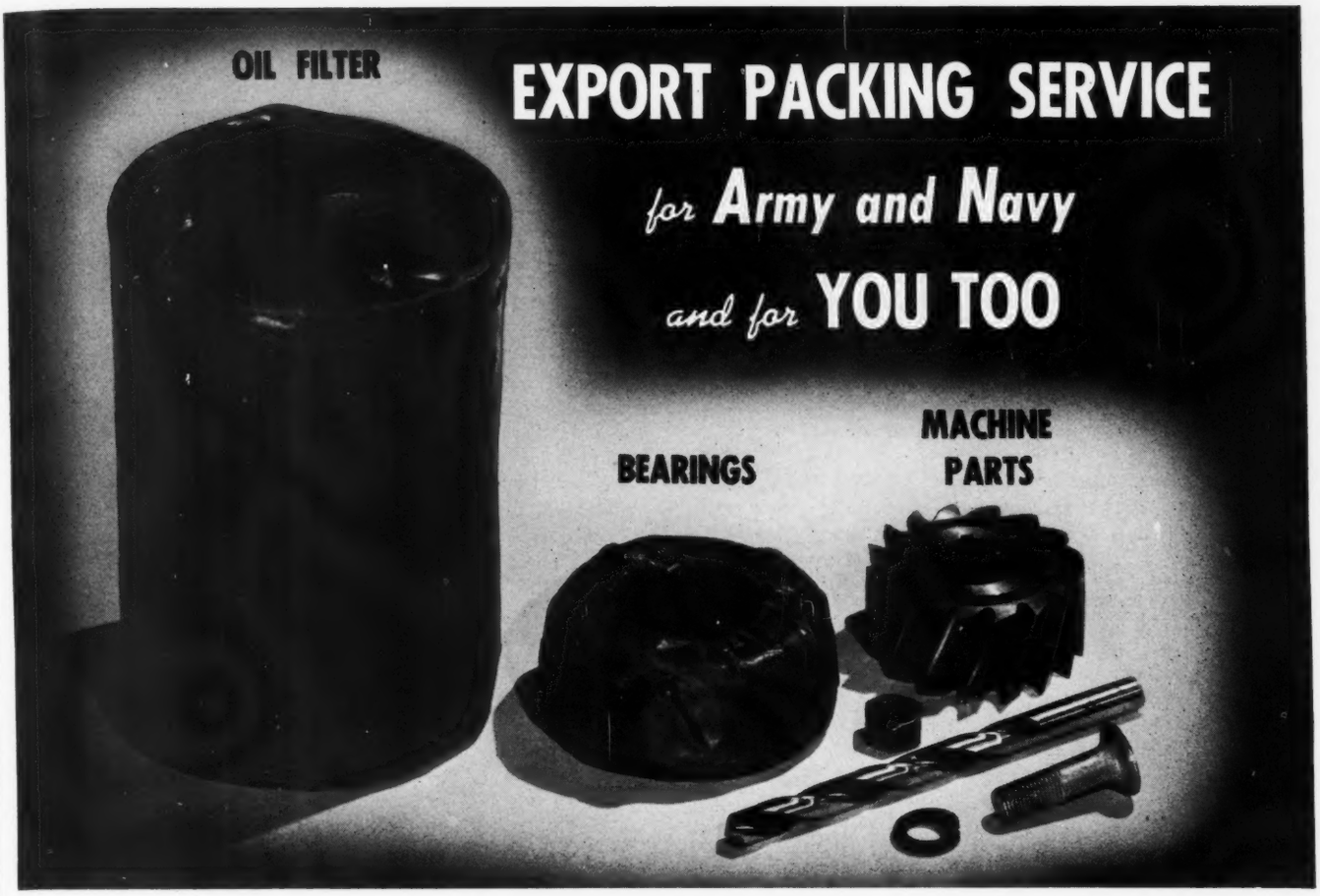
Construction of additional manufacturing facilities for its Resinox phenolic resins and molding compounds at Monsanto Chemical Co.'s plastics plant at Springfield, Mass., has been approved by the War Production Board. The increased capacity will be devoted entirely to high-priority war applications and will not relieve the critical situation on phenolic materials, according to John C. Brooks, vice-president of the company.

Thomas M. Rector, manager of research and development for General Foods Corp. and head of the company's Central Laboratories at Hoboken, N. J., recently announced the following personnel appointments: Dr. Harold S. Levenson has been made a division head in the physical chemistry section of Central Laboratories; Dr. John H. Lutz has been appointed research staff project leader in charge of packaging research, and Millard O. Ricker has joined the research staff as project leader in the engineering research section of Central Laboratories.

Elliott W. Beckett has been appointed vice-president and general manager of Continental Can Co. of Canada, Limited, succeeding Walter M. Tomkins, who has been transferred to Chicago to assist Paul E. Pearson, vice-president of Continental Can Co., Inc., in charge of equipment manufacture on special assignments.

Elliott W. Beckett

Other appointments and elections made by the can company recently are those of Colin L. Westerbeck, who was appointed local sales manager, General Line, of the St. Louis office, and the election of W. J. Buttfield as an additional member of its board of directors. Mr. Buttfield is president of Vulcan Detinning Co. of Sewaren, N. J. He has been connected since 1912 with that organization, which is a large shipper of scrap steel and is closely connected with the can-making industry.



● Our special custom packaging service now handles the products of some of the largest manufacturers of metal replacement parts.

We take such products as oil filters, roller bearings and brake assemblies, as well as all sorts of miscellaneous nuts, bolts, washers, machine parts and other items, direct from the manufacturers.

These parts are processed by cleaning, if necessary, giving them hot or cold oil baths, wrapping each in a special non-oxidized cloth and dipping it in a special protective wax. Our customers find it more economical and efficient to ship parts to us for this processing and packing operation than to set up an expensive and complicated department themselves. We tranship either direct to the Government or to our customers' warehouses.

WE GUARANTEE
to meet all Government packaging specifications for overseas shipments.

THE J. E. MERGOTT COMPANY
304-358 JELLIFF AVE. JEMCo NEWARK, NEW JERSEY

For Your Information

The Plastics Molders' Committee recently conducted a survey to determine whether molders prefer bags or drums for packaging molding compounds. The survey was made in the event that materials manufacturers would be requested by WPB to package all materials in paper bags instead of in drums. Copies of the findings of the survey were transmitted to members of the materials manufacturers Task Committee which met in Washington early in August. The findings of the Plastics Molders' Committee indicated a preference for drums, but at this time no decision has been reached by the Task Committee of the material manufacturers in regard to packaging methods.

A letter from the Aldine Paper Co., Inc., of New York City, has a number of interesting comments to add to the article which appeared last month in Modern Packaging, entitled, "Life Jacket Dye Marker." In part Walter T. Cusack wrote about the packet which holds the dye and the outer envelope:

"As mentioned, the Calco Chemical Co. has been instrumental in bringing this (the dye packet) from the development stage to something tangible. When they first started to work on it, they approached us, believing that a paper could be made to do the job. You stated that this paper is the same type used for ordinary tea bags. In a sense this is correct, as it permits your readers to realize the type of stock. However, there was a great deal more to it. . . . The package of dye is many times larger than a tea bag and subject to a great deal more abuse. Consequently, we had to develop a grade that would stand the punishment. Furthermore, in actual use, the dye in the package must diffuse rapidly, meeting specifications established by the army and navy. Not only did we have to develop a paper of extra strength, but it also had to have an openness in structure that would permit this rapid diffusion.

"The original development of a sea-marker package embodied the making up of a stitched envelope. This was handled by Calco. However, it was a slow and costly job. Consequently, we got to work on the problem to see if something could not be done about it. As a result of our efforts, two new types of envelopes are available to both the army and navy. One involves the treatment of the paper in such a way that it can be sealed into an envelope or bag by heat and pressure.

"Here again, a great deal of special consideration was involved. Generally speaking, heat sealing properties are imparted to paper by coating it with a continuous film of thermoplastic or thermosetting material. If this were done with the Aldex used for this type of package, the pores in the paper would naturally be plugged up and the package would lose its effectiveness. Consequently, an entirely different procedure was followed. The resulting paper under actual test shows that the dye within a heat-sealed package will diffuse just as quickly as it does in one that has not been treated for heat sealing.

"In addition to the above mentioned type, the armed forces also have a gummed envelope that they can use. It is our understanding that the authorities are more favorably inclined towards this package. However, we have heard of no definite decision as yet. Our main interest lies in the fact that we have been able to provide a paper to do a very special job and that this development will be instrumental in the saving of lives."

A new wartime "Canned Food Handbook" just issued by the American Can Co. contains a variety of information on processed canned foods as affected by government regulations and requirements for the armed forces. The new edition is designed to meet the changing picture in the industry as caused by the war and to bring to date, as far as is feasible, the situation as it has been affected by the many official rulings on canned foods. Copies are available upon request to the can company.

Paper and Containers Week will be featured in Chicago, Sept. 21–24, by an Army and Navy Requirements Conference sponsored by the Technical Assn. of the Pulp and Paper Industry. The TAPPI meeting will be held at the Palmer House while a number of trade associations in the paper and converting industries will meet during the week in other Chicago hotels. Army and Navy and the WPB will outline their respective technical problems on Sept. 21 and on Sept. 22 there will be sessions on containers and packaging, the morning session being a condensation of the Ordnance Packaging Course given under the direction of G. A. Garratt of the Forest Products Laboratory. This will be limited largely to fibre containers and will be an interpretation of Army and Navy Specifications.

The Packaging Institute will hold its annual conference November 4 and 5 at Hotel New Yorker in New York City. Technical wartime problems in packaging with particular reference to new developments will be the basis of all discussions.

A Philadelphia dairy has been packing its milk in paper milk cartons which bear a message from the WPB urging women to send all empty cans to their local salvage headquarters. It also gives complete instructions for cleaning and flattening the cans preparatory to their journey.

In cooperation with the U. S. Forest Products Laboratory, Madison, Wis., the American Management Assn. will sponsor a packaging course for representatives of industry. The instruction, which will be conducted at Madison, is planned to cover a period of 5 days. Two sessions of the course have been scheduled, one to be held from Sept. 13 – 17, the other from Sept. 27 – Oct. 1. Additional sessions may be provided during October if sufficient enrollments are obtained. A moderate tuition charge will be made to cover the cost of the work. The instruction will be patterned after the courses which have been given regularly for more than a year at the Forest Products Laboratory under army and navy auspices and will deal primarily with the packaging of war materials and supplies. Additional information regarding the course may be obtained by writing to the American Management Assn., 330 West 42nd St., New York City or the U. S. Forest Products Laboratory, Madison, Wis.

How the nation's can manufacturing industry is solving critical wartime problems through conservation of strategic materials, development of substitutes and intensive nutritional research was described before the American Assn. for the Advancement of Science at its recent annual meeting, by James A. Stewart, vice-president of the American Can Co. The prime problem confronting the can manufacturers, according to Mr. Stewart, has been that of conserving and extending the national stockpile of tin, with the major sources of supply cut off by war. He described in detail what is being accomplished in perfection of "conservation" plates and other substitute metal requirements for can manufacture. Among various phases of the tin conservation program, outstanding results are being accomplished through the replacement of standard hot dipped tinplate by electrolytic plate and enameled chemically treated steel.

Other wartime advances in can-making practices, in line with the utilization of electrolytic plates, include numerous achievements of the research laboratories. Among the more important new developments listed are conservation solders, utilizing silver instead of tin; sealing compounds replacing crude rubber, and new oils, resins and synthetics. (*Continued on page 114*)

TALK ABOUT *Your* PACKAGING PROBLEM!

• A quick look at our railroads will give you the idea. Fewer cars for civilians, fewer units for you to sell. More people riding, a larger demand for your product. Easy, convenient travel is out, so are "frosted-cake" packages.

But you *can* keep going. Cut down on frills, make every container fill a functional need. That's the reason Ridgelo boxboards are in food packages, synthetic rubber boxes, pharmaceutical and chemical cartons, a great many tin conversions.

Put those all together and they spell war time packaging — which is our job and yours!

★ Ridgelo ★

CLAY COATED

REG. U. S. PAT. OFF.

PAPERBOARDS FOR CONVERSION AND ESSENTIAL USES

MADE AT RIDGEFIELD, N. J.
BY LOWE PAPER COMPANY

Representatives: E. C. Collins, Baltimore • Bradner Smith and Company and Mac Sim Bar Paper Company, Chicago • H. B. Royce, Detroit
Gordon Murphy and Norman A. Buist, Los Angeles • A. E. Kellogg, St. Louis • Philip Rudolph & Son, Inc., Philadelphia

Multiwall bags

(*Continued from page 82*) as the product cools. This type of bag is closed by stapling the open corner while the product in the package is still in a hot and liquid state.

All of these bags may be satchel bottom or automatic bottom and may be sewn or pasted.

Packing and closing

Multiwall valve paper bag packing machines are of four basic types: screw, belt, impeller and gravity—so called because these are the methods by which the materials are propelled through the filling tube and into the bags. Adjustments and variations of these four types have been developed for more than 100 products. Number and size of filling tubes vary with required production. Machines are adjustable for various bag sizes. Products may be pre-weighed or filled and weighed simultaneously.

Open-mouth bags are closed by sewing, wire tie, staple or gummed tape. The sewn type closure can be accomplished automatically with sewing equipment which applies a bound-over tape and filter cord and sews through all plies of the bag. The wire tie is efficient for applications where the number of units packed does not warrant installation of automatic equipment. A hand-twisting tool constitutes the entire equipment for effecting a securely tied closure around the neck of the bag. Stapling can be done by hand or with automatic equipment. This type of closure is used for bags containing such products as potatoes, coal and asphalt. Gummed tape closure is accomplished by folding the plies of the bag and sealing the final fold with gummed tape. Most common use for this is in smaller sizes.

Due to the shortage of fabrics and metal, many packers have turned to the multiwall bag to supply their needs for containers. Companies who have used fabric bags previously, can adapt existing bag closing equipment to handle paper bags with very slight changes in most cases and with a minimum of critical material. Bag packers, sewing machines and wire ties required for the conversion from critical containers to less critical containers are available.

QMC overslip multiwall bag

Interesting tests on the performance of multiwall bags were those made by the Technical Committees of the Paper Shipping Sack Manufacturers' Assn. and the Textile Bag Manufacturers Assn. Tests were made with cloth bags in combination with an overslip multiwall bag for the Army, Navy and Department of Agriculture. The tests were based on procedure approved by Containers Branch of WPB for the overseas method of shipment in accordance with OQMG 103 Specifications. This specification was written to give added strength and moisture protection to fabric bags by placing them inside a 5-ply multiwall bag. The tests, however, were made to show relative performance of such combinations as well as multiwall bags within multiwall bags, and multiwall bags without inner bag. The test products were flour, beans and salt. Methods included: (A) A cycle of free drops ranging from 5 feet to 10 feet, planned in such a way that no one single part of the sack construction could escape trial and that both machine and cross directions of the paper were subjected to rough treatment. (B) Repetition of the cycle after the various bag combinations had been weighed and sprayed for 12 hours. (C) Repetition of the cycle a third time after the bags had been subjected to submersion for 24 hours. All tests were conducted at temperatures not less than 50 deg. F. and 60 per cent relative humidity.

Conclusions reported were as follows:

1. For conditions requiring maximum resistance to water penetration these tests and general experience indicate that multiwall within multiwall is superior.
2. The substitution of five plies of all wet-strength kraft overslips in the present OQMG 103 Specifications (fabric bag within paper multiwall) provided a superior overseas package to the one which is now giving satisfactory service.
3. In the "A" tests (dry) the current OQMG 103 combination will withstand greater punishment than a single 6-ply multiwall paper shipping sack.
4. In "B" tests (24 hours spraying) the 6-ply multiwall sack made from all wet-strength paper gives a better performance when wet than the current OQMC 103 combination.
5. In the "C" tests (24 hours submersion) the 6-ply multiwall sack made from all wet-strength paper gives a better performance when wet than the current OQMG 103 combination.

Future of multiwall bags

Multiwall bag manufacturers say few industries that have ever used multiwall bags go back to other containers. The efficiency, easy handling, small-space storage requirements of these bags give them distinct advantages. However, in the post-war era, competition will be keen among all package suppliers to retain gains made during the period 1935 to 1941. But multiwall bag manufacturers do not consider their gains entirely a wartime condition. During the past three years, production has been increased some, but the trend has been toward a level of about 1,000,000,000 multiwall bags a year. This leveling off is attributed to a falling off of civilian construction and building activity, which in normal times requires many products packaged in bags. Bag production normally consumed for packaging products of this type is now being used for military purposes and for replacements of containers not now available. Although the number of bags produced in 1941 was substantially the same as in 1942, about 50 per cent of the 300 products now in multiwall bags are new uses. If these new users continue to buy bags after the war and if more bags are required for materials supplied to the building trades, then bag production is bound to continue at a high level—even when military uses are curtailed. New comers are also entering this field of packaging. For example, blocks of synthetic rubber are being placed in multiwall bags. And this is only one of the new products that will find an important place in the packaging picture now and after the war.

Credit: Photos used to illustrate this article courtesy, St. Regis Paper Co., New York City.

Mobile piano

(*Continued from page 76*) of course, although before the war families of army and navy officers, who had to change their living quarters frequently, often purchased furniture that had shipping cases designed for various combinations such as table and chairs, bed and bedding, etc., whenever these units were available.

Compact packing and more protective and efficient cases for the shipping of furniture may well be a postwar improvement that will grow out of such related units as this mobile piano with its specially tailored shipping case.

First Preference

PLANTERS PEANUTS have long enjoyed first preference among peanut-lovers everywhere.

Included in the many varieties distributed by the Planters Nut & Chocolate Company, Wilkes-Barre, Pennsylvania, are Blanched Salted Peanuts, packed in handy glass jars, tightly sealed with Crown Closures . . . and sold exclusively through military outlets.

(*War Production Board restrictions prohibit the use of metal closures on peanuts for civilian distribution.*)

Manufacturers converting to glass containers in order to save more critical materials, will find Crown Closures available in a wide variety of types and sizes to meet their wartime needs.

CROWN CORK & SEAL COMPANY

World's Largest Makers of Closures for Glass Containers

BALTIMORE, MD.

CROWN CLOSURES

CROWN'S WARTIME POLICY: *To supply closures, containers and services for packaging foods, beverages, chemicals, etc., needed by civilians and the armed forces. To build an ever-increasing volume of vitally needed weapons of war for our fighting men.*

Nationwide drive—pulp

(*Continued from page 45*) Another possibility is a limitation order, limiting containers for certain products until there are plenty of containers for the most essential uses.

But that is about the limit that can be reached in so far as definite orders are concerned. WPB officials have great hope that an educational campaign for re-use of old containers and redesign of over-packaged products will become a positive factor in relieving the feared shortage.

The campaign to re-use old containers is being placed on a purely educational basis. No orders are anticipated to compel compliance, but suggestions will be made and it is hoped that voluntary compliance will be forthcoming.

Plans are being made for publicity and meetings with all types of industrial groups where users of containers will be told how to make use of every possible method for re-use. There will be no attempt to reach the housewife. Meetings will be confined largely to business groups. Manufacturers and producers will be urged to line up with their customers in returning containers whenever possible or at least make them do double duty at the receiving end. All suggestions will be kept on a practical basis. WPB officials are experienced enough to know that damaged containers are useless except for scrap and certainly will not encourage shipment of empty used containers back to their original source over long distances except under unusual circumstances.

There will be no elaborate clearance system except in lines of business where it can be easily done. The small user of containers will be urged to deal with the second-hand box merchant and he in turn will be given whatever aid possible to increase his activity.

Manufacturers will be asked to use their own ingenuity as much as possible. One example is given of a large manufacturer who shipped most of his products in standard size boxes for nearly all of his production. But he always had a few odd-sized items that required odd-sized boxes. The shipping crew was put to work sorting containers that came into the plant from outside sources, inspecting, and sometimes even painting out the labels or covering them with home company labels. The best of these boxes were then sent to the shipping room, piled in front of the shipping clerks and made easily available whenever an odd size box was needed.

Another manufacturer shipping labels used the same size box for his biggest customer at all times. It was a simple matter for him to have those boxes knocked down and returned, even though they traveled a great distance by freight. Readers should be warned however that this condition exists only in a limited number of cases where operations are practically uniform at all times and under all conditions. If it is too difficult to get back your used containers it is much better to try the second hand dealer.

Stress will also be laid on opening containers without damaging them. Several ingenious contrivances have been devised for this purpose and most of them can be fashioned in a manufacturer's own plant or at least in a neighbor's.

Another untapped source for possible containers are dead inventories—boxes that have been practically forgotten because the product they were supposed to carry has become obsolete or taken off the market. Practically all of these boxes can be used in some form or another by their original owner or a nearby plant. Here again it is possible that new labels can be used to cover the old ones. Regional offices of WPB will seek out all inventories of this sort and endeavor to put them in use.

But the entire campaign will not be devoted to re-use. Some enthusiasts claim that great quantities of paper can be saved by elimination of over-packing. Their motto is, "Forget appearance for the time being and consider utility." Elaborate boxes have been used in the past for many reasons. Safety was one. Strong selling by a box maker was another. Numerous examples are still on the market where products are extremely over-packed. Special slotting alone accounts for paper that could be eliminated by use of regular slotting.

Again it is important to point out that WPB feels that these particular parts of the conservation campaign should not be enforced through legislation. They are asking for voluntary cooperation through educational information and are confident that the ingenuity of America's industrial operators will be sufficient to make the campaign a success.

Why newsprint when container pulp is scarce?

When lack of sufficient manpower during last season has resulted in a shortage of one million cords of pulpwood in Canada, it sounds strange that the shortage of fibreboard containers should be allowed while such fibre is being made up into newsprint. But here is the answer as reported by S. H. Cooke, Western Canadian Correspondence Service.

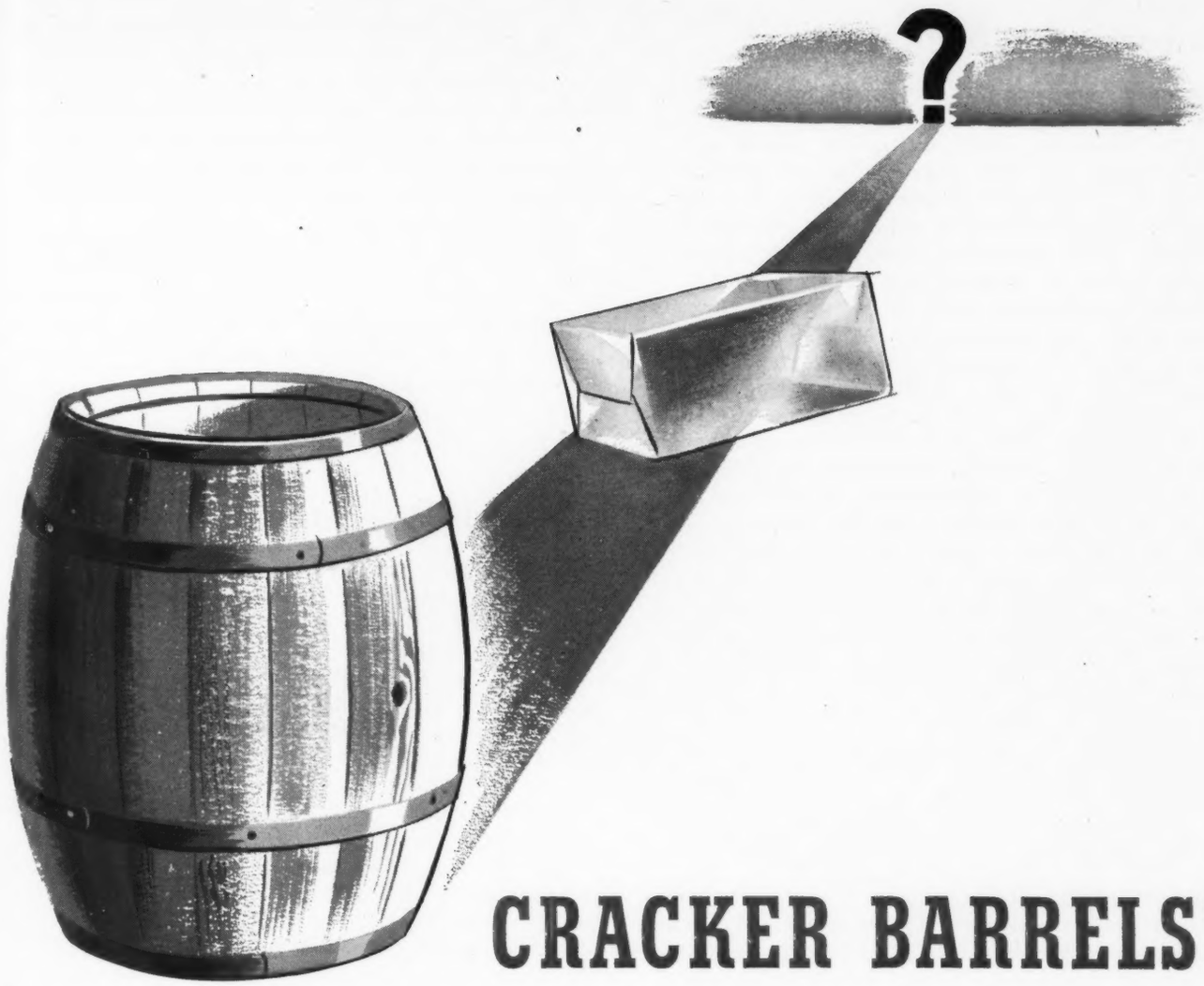
The theory is that it is imperative to make the free publication of world news possible in occupied countries as fast as they are liberated to benefit the people of those countries by restoring them a free press. It is said to be essential to the war effort that the United States, Britain and the other countries should have sufficient paper to print the news to strengthen public morale. Five thousand tons of newsprint were recently shipped from Canada to the Near East and North Africa for this purpose.

As shipping space becomes freer, more paper and fibre will be needed for export, Mr. Cooke reported, even though Britain today is reduced to 20 per cent of the prewar level. Already the allied nations are said to be piling up reserves of such products to send to countries that are now occupied.

All this has its resultant effect on the availability of wood pulp and pulp sulphide for essential war packaging. As late as 1940 Canada was producing more than 50 per cent of the world output. The Canadian domestic consumption does not amount to very much, but the United States consumption constitutes the major demand on Canadian pulp forest products to the extent of 71 per cent in prewar times.

Army, navy and essential civilian needs are said to require this year 15,000,000 tons of paper and pulpwood. It will take $2^1/_2$ million cords of pulpwood to manufacture the paper needed in the United States in 1943 to package food supplies and munitions for overseas shipment and enormous quantities of pulpwood for manufacture of smokeless powder, cellulose for explosives and many other products.

The drain on Canadian forestry reserves for the products to fashion fibre cartons and wooden boxes can be met so far as timber is concerned, but what the executives of most industries using such containers do not fully recognize is the serious shortage of manpower in Western forests and board mills, Mr. Cooke stated. One company said that only 36.9 per cent of the minimum requirements of men were in the bush. You would not be far out in assuming that this is the general manpower condition that maintains.



CRACKER BARRELS?

War-engendered conceptions of packaging multiply in dizzying tempo. Already—pre-war—and present—packages are casualties. On the day of Victory, some packages will be as old-fashioned as sulphur and molasses, cracker barrels, and pot-bellied stoves! . . . Pacing packaging's swift strides into the future, Palmer engineers are evolving revolutionary techniques that anticipate many a merchandising problem-to-be. Ready for Palmer drafting boards are new machines—more efficient, faster, more compact, more completely automatic—designed to handle new products, new packaging materials, new adhesives and sealing methods. Soon it will be too late to catch up. Now is the time to discuss together "the shape of things to come"—lest tomorrow finds us unprepared.

PALMER
CHICAGO

FRANK D. PALMER, INC.

528-34 North Western Ave. • Chicago, Ill. • Chesapeake 3344

PACKAGE DEVELOPMENT LABORATORY ★ SPECIAL MACHINERY MANUFACTURERS

Patterns for package

(*Continued from page 57*) The technique of marketing tests seems to be more commonly understood and used. Here the advertising agency is frequently utilized and its guidance seems to be fully appreciated in this direction as it also is in the merchandising aspects of the package itself.

Finally, it is beginning to be realized that packaging is a profession. Many concerns have come to the conclusion that it is wise economy to appoint a single packaging executive to supervise and coordinate all of the far-reaching elements that enter into a packaging program.

"Where can we look for people with an all-around training for such jobs?" This was a question put to the interviewer more than once. So far, to the best of our knowledge there is only one institution in the country which offers a fairly well-balanced course in packaging. Commercial art schools, it is true, present the elements of package design. But today package planning requires training in chemistry, engineering, materials, production, merchandising—on top of which must be sprinkled a liberal portion of legal information. Packaging is a science. It is rapidly coming to be generally regarded as such. The next step will be educational measures in qualified institutions that will meet the need of which the field is already aware.

New foods

(*Continued from page 63*) biscuits, chocolate malt milk tablets, all wrapped in greaseproof paper and foil, and vacuum packed in small tins about twice the size of a sardine can. The cans are marked at a 2-oz. level and seamen are warned in instructions not to throw the cans away, as they can be used to ration drinking water or to catch rain water. The highly concentrated food is so prepared that it can stand in the vacuum packed tins for four or five years in sub-zero or tropical climates. The food will serve to keep a man alive on his life raft or lifeboat, but he will lose weight.

The Canadian armed forces have other emergency rations under development, but the above have been placed in use in the summer of 1943 after strenuous tests under all weathers.

Questions and answers

(*Continued from page 92*)

ANSWER: We cannot be sure we know the exact wrapping you refer to. Such a paper is covered by Federal Specification UU-P-252, September 19, 1940, Paraffined Paper (for surgical dressings). You may secure a copy of this specification from the Superintendent of Documents, Washington, D. C.

Section C 1 b of the specification reads—"Paraffin shall be fully refined wax, without excessive oil content and shall be odorless and colorless. It shall have a melting point not less than 53 deg. C. (127 deg. F.)." This corresponds to ordinary fully refined paraffin 130 deg./132 deg. F.A.M.P. and you should have no difficulty procuring it.

The paper is required to be free of unbleached stock and groundwood pulp, color white and shall not be less than 30 lbs. weight, 24 x 36—480 basis.

The finished paper shall have a paraffin content of 35 per cent minimum and its bursting strength shall be not less than 10 points. It is required in three dimensions and the finished paper is to be wound on cardboard cores outer wrapped with a good grade cover paper.

Purchases for the Medical Corps are centralized at the St. Louis Medical Corps Procurement District, 12th and Spruce Streets, St. Louis, Mo. After you have procured the specification and believe you can prepare such paper, we suggest you advise the St. Louis Medical Corps of this and arrange to discuss it with them.

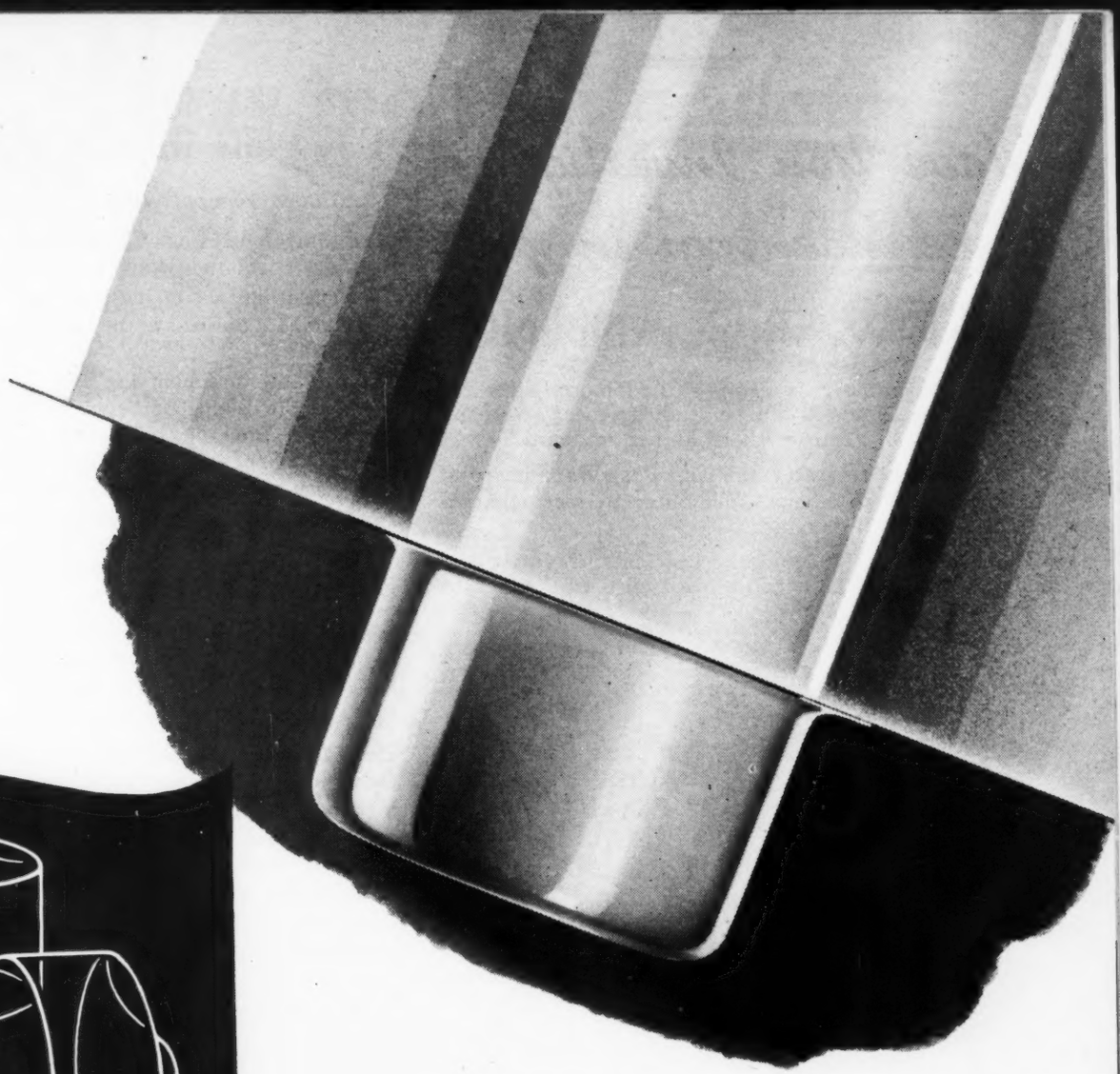
Makeshift—line

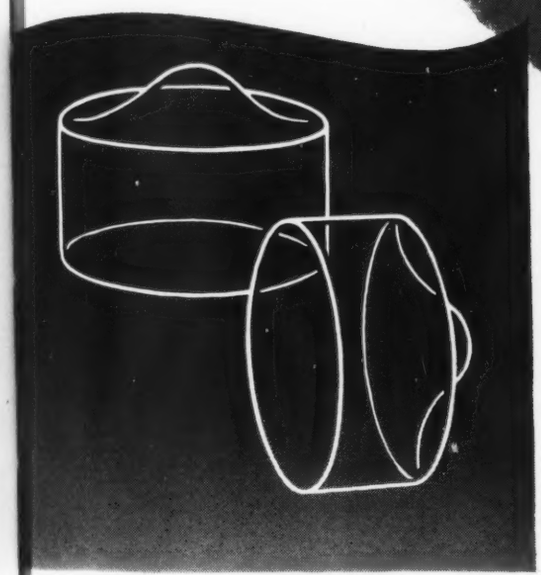
(*Continued from page 91*) chuckle is really one of delight because of this most ingenious achievement.

Most readers will probably remember that old-fashioned bicycle chain, with square links that came apart sidewise. Stanley Eichor, Lambert's production man who rigged up this device, obtained about 18 or 20 ft. of this kind of chain. To every seventh or eighth link, specially formed for the purpose, by means of nut and bolt, he attached an ordinary spring clip for holding papers, obtainable in any stationery store. The whole chain carries 50 of these clips and by means of small cogs the chain descends to the proper height over the paraffin bath. This bath, another piece of home-made apparatus, is wired for electrical heat and equipped with a thermostat. Just shortly before the moving chain dips to enter the bath, there is a gadget made of metal plates which engages each of the spring clips as it passes and causes the jaws to open. Then the ampoule, which has completed the circuit, drops from the open jaws and the deft fingers of an alert operator places an unwaxed ampoule in them. As the paper clip leaves the gadget of metal plate, its jaws close and the ampoule—stocking and all—is given its paraffin bath. The dip is so adjusted that the wax comes within about $^1/_4$ in. of the red thread which is stitched across the upper end of the knitted sleeve. Thus, the ampoule itself is given a complete coating of paraffin which hardens into a protective shell. When it reaches the point of ultimate use, it is broken with the fingers. The wax sleeve insures against bits of broken glass escaping and the iodine is absorbed by the unwaxed part of the sleeve which acts as a little brush to apply it to the wound.

Emerging from the bath, each ampoule travels the full length of the chain and back. The drying process is speeded by an ordinary electric fan. As the journey ends, the ampoules are dropped in front of another operator who rounds the waxed end and passes them on to the girls who insert them in the cartons, six to the carton, 10 cartons to a container, 100 containers to the wooden case—all according to specifications, and 6,000 packaged ampoules are ready for shipment to the armed forces.

Credits: Ampoules, Kimble Glass Co., Vineland, N. J. Ampoule filler, Scientific Glass Apparatus Co., Bloomfield, N. J. Ampoule sealing machine, Modern Machine & Tool Co., Plainfield, N. J. Knitted sleeves, St. Louis Braid Co. and International Shoe Co., St. Louis, Mo. Cartons and containers, Continental Paper Co., Ridgefield Park, N. J., and Mott Carton & Paper Co., St. Louis, Missouri.





20 MM. CANNON COVER

Protecting the muzzles of 20 mm. cannons on our fighting planes is this small, but highly effective, deep drawn cover, made of Ethocel Sheeting.

It keeps the gun clean in all types of weather, minimizing the corrosive action of salt spray and eliminating sand and dirt. Weight is negligible (100 covers per pound) and wind resistance is reduced.

The cap is shot off when the gun is fired and replaced with a new cover on landing. Quantity production, necessary to meet the ever growing demand for this part, is easily achieved with Ethocel Sheeting.

ETHOCEL SHEETING

rapid production of deep drawn parts

The deep drawn cup illustrated above emphasizes the type of product easily fabricated of Ethocel Sheeting by drawing processes. Exceptional ductility permits drawing from sheets as thin as .003" and as heavy as .020". The draw itself can be made to a depth equaling the diameter in a single operation. Mass production of more than 1000 pieces per hour is possible!

Moreover, Ethocel Sheeting's high ductility and low temperature flexibility are retained after drawing. This is of vast importance in many products which must serve under temperature extremes varying from —70° to as high as 200° F.

These factors, combined with clarity and toughness—original characteristics retained after drawing—make Ethocel Sheeting valuable for many wartime applications.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • St. Louis • Chicago • Houston • San Francisco • Los Angeles • Seattle

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DOW PLASTICS

STYRON • SARAN

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

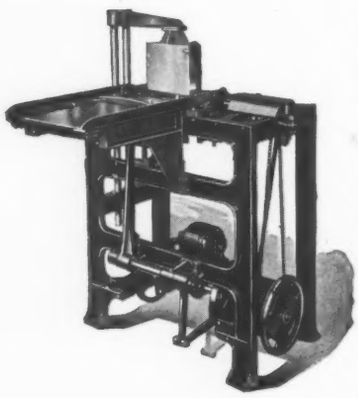
Have You Investigated these machines in your POST-WAR PLANNING?

When industry is again turned loose, after the fighting ends, you will not be ready to meet stiff competition with obsolete methods and equipment.

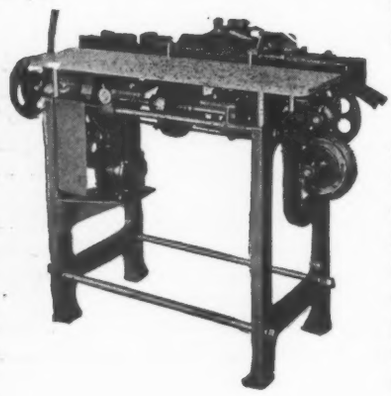
Now is the time to make your Post-War Plans and to be ready with efficient machines to meet the inevitable increased demand.

Production will again be a key factor in your plant and this can only be accomplished with equipment to meet the situation.

Ask us to send you information on these machines to meet your specific requirements. Send a sample of each size carton you desire to handle with your inquiry.



This PETERS JUNIOR CARTON FORMING AND LINING MACHINE sets up 30-40 "Peters Style" cartons per minute, requiring one operator. After the cartons are set up, they drop onto the conveyor belt where they are carried to be filled. Can be made adjustable to handle several carton sizes.



This PETERS JUNIOR CARTON FOLDING AND CLOSING MACHINE automatically closes 30-40 "Peters Style" cartons per minute, requiring no operator. The cartons enter this machine on conveyor belt as open, filled cartons and leave machine completely closed, ready to be packed or wrapped for shipment. Can also be made adjustable to handle several carton sizes.

With the necessary priority, we can build a few new machines now. Without a priority, we can place your name on the preferred list for immediate shipment after the war is won.

PETERS MACHINERY COMPANY
GENERAL OFFICE AND FACTORY
4700 RAVENSWOOD AVENUE, CHICAGO, ILL.

For your information

(*Continued from page 106*)

The 15th Annual Boston Conference on Distribution will be held Oct. 18–19 at Hotel Statler as announced by Daniel Bloomfield, director of the conference. The theme will be "Planning for Business in the Postwar Era."

With a view to simplifying and standardizing the products they are making for the government, a group of specialty bag manufacturers met in New York City recently and formed the Specialty Flexible Container Manufacturers Institute, which will act as a fact-finding body. The group elected Gordon Friend of the Thomas Royal Co., Philadelphia, president.

CORRECTION

On page 100 of the August issue the Padco Corp. of St. Louis, Mo., was wrongly credited with the making of the Marsh Stencil Machine. This machine is made by the Marsh Stencil Machine Co., Belleville, Ill.

The Karl Kiefer Machine Co., Cincinnati, Ohio, should have been credited as the designers and manufacturers of the machine used by E. R. Squibb & Sons in making the latter's Syrette package, described on page 53 of August Modern Packaging in the story "Medical Packs Help Reduce War Casualties."

Batteries—battlefront

(*Continued from page 71*) tests and moisture-vapor penetration tests to determine the success or failure of the packing, three shipping boxes, complete with contents, sealed and strapped, were stored for 48 hours at different temperatures and atmospheric conditions as follows: (a) 130 deg. F. and 80 per cent relative humidity; (b) 40 deg. F.; (c) normal atmospheric conditions (70 deg. F. and 35 per cent relative humidity).

After the storage time of 48 hours under these conditions, the wooden shipping boxes were immersed 24 inches below the surface of water, at a temperature of 60 deg. to 80 deg. F. for 24 hours. The top of each box was nearest the surface of the water for the first 12 hours and then the boxes were reversed so that the bottom of each was nearest the surface for the remaining 12 hours. When the 24-hour immersion was completed, each box was immediately given a drop test while still wet. Each box had to withstand 8 drops when dropped from a height of 18 in. on to a concrete or stone surface. They were dropped in such a manner that the box struck diagonally on each of the 8 corners at least once. Immediately after completion of the drop test, each box was given another immersion test as described above.

The packing was judged a failure if: (1) the shipping box opened along any edge, or if any boards split or cracked, or if the steel strapping broke; (2) if there was any water penetration to the standard cartons; (3) moisture-vapor penetration to contents exceeded the rate of 0.25 gram/100 sq. in./24 hours with a vapor pressure differential of 42 mm of mercury and 100 deg. F.

These were the tests given when the new method for packing and packaging dry batteries was being developed by the Signal Corps. (*Continued on page 116*)

Navy model *Vaculator* brews postwar sales for Melmac

The men who go to sea in ships for Uncle Sam enjoy good coffee. One reason is *Vaculator**. Created especially for Navy and shipboard use by the Hill-Shaw Company, this new-day coffee brewer features upper units of MELMAC** Plastic.

MELMAC, a product of Cyanamid research in plastics, has some significant characteristics for designers, awake to Tomorrow's trends and competition, to consider. It is extremely low in moisture absorption, resistant to prolonged immersion in boiling water, chemically inert, and highly resistant to staining and the action of nearly all common chemical agents.

Helping to supply a better cup of coffee to those who man our fighting ships is just one of many ways in which MELMAC is "serving" the nation's war needs. One of these days it will be available to designers for civilian merchandise, bringing a new freedom to the task of transforming postwar planning into practical reality.

For complete information concerning Cyanamid's new plastics for postwar product and package design, you have only to write, outlining the characteristics of the material required. Consulting Cyanamid about postwar packaging is good sales psychology. Please use our Postal Zone Number—New York 20, N. Y.

AMERICAN CYANAMID COMPANY

PLASTICS DIVISION

34 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

*Reg. Trademark of Hill-Shaw Company **Reg. U. S. Pat. Off.

Cyanamid Plastics

BEETLE • MELMAC • URAC

MELURAC • LAMINAC

TOUGH STUFF

3-M ADHESIVES
are made to make things
STAY PUT!

3-M Adhesive Engineers have developed over 100 Adhesives that have been used by manufacturers for years for adhering materials, sealing, coating, impregnating and insulating.

Adhering one material to another requires special adhesives to meet all conditions. Therefore, if you have this type of problem why not let the long range experience of our adhesive engineers aid you in solving it? Just send the coupon below. There is no obligation.

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SAINT PAUL 6, MINNESOTA
ADHESIVE DIVISION, DETROIT 2, MICHIGAN

Gentlemen: MPA 943
Please have a 3-M Engineer call to discuss our adhesive needs.

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★ BUY WAR BONDS ★

The laminated kraft, foil, cellophane, asphalt and thermoplastic film fulfilled Signal Corps requirements for the protective bag enclosing the unit package. Now the field is open to other manufacturers who can supply an equally satisfactory product. Also, a revision being made in Table 60 of Army Specification 100-14A changes the length of time the H-1 waterproof paper must withstand immersion (from 48 hours to 24 hours) and thus lets down the bars for about 20 manufacturers who have a product that might be used for the waterproof bag liners in packing batteries for the Signal Corps.

Credit: Protective films by Reynolds Metals Co., Richmond, Va., and Cincinnati Industries, Lockland (Cincinnati), Ohio.

What containers—sky trains?

(Continued from page 49) Considerable volume of radium, thorium and other radioactive substances including salts and liquids containing radium have moved by air express, but due to the difficulty of handling are not now allowed except under certain conditions.

The packaging of these substances presents a serious problem. Unless they are protected by heavy barriers of lead or platinum, it is found that they cause considerable damage by fogging to undeveloped moving picture, photographic and X-ray film. Government tests indicate that 25 mg. of radium at the center of a $1^1/_2$-in. diameter sphere of lead will not fog films during 10 hours of exposure at 4 ft. and 40 hours at 10 ft.

Air Cargo, Inc., lists packing methods as the first of 16 distribution factors associated with air transportation, according to George F. Bauer, international traffic analyst for this organization sponsored by the airlines to conduct investigations into commercial aviation subjects of special importance in the post-war period. This organization is making a detailed study of the suitability of some 200 commodities for air transport.

American commercial air lines in 1927 carried 45,860 lbs. of air express. In 1941, their last normal year of operations, they carried 22,315,000 lbs.

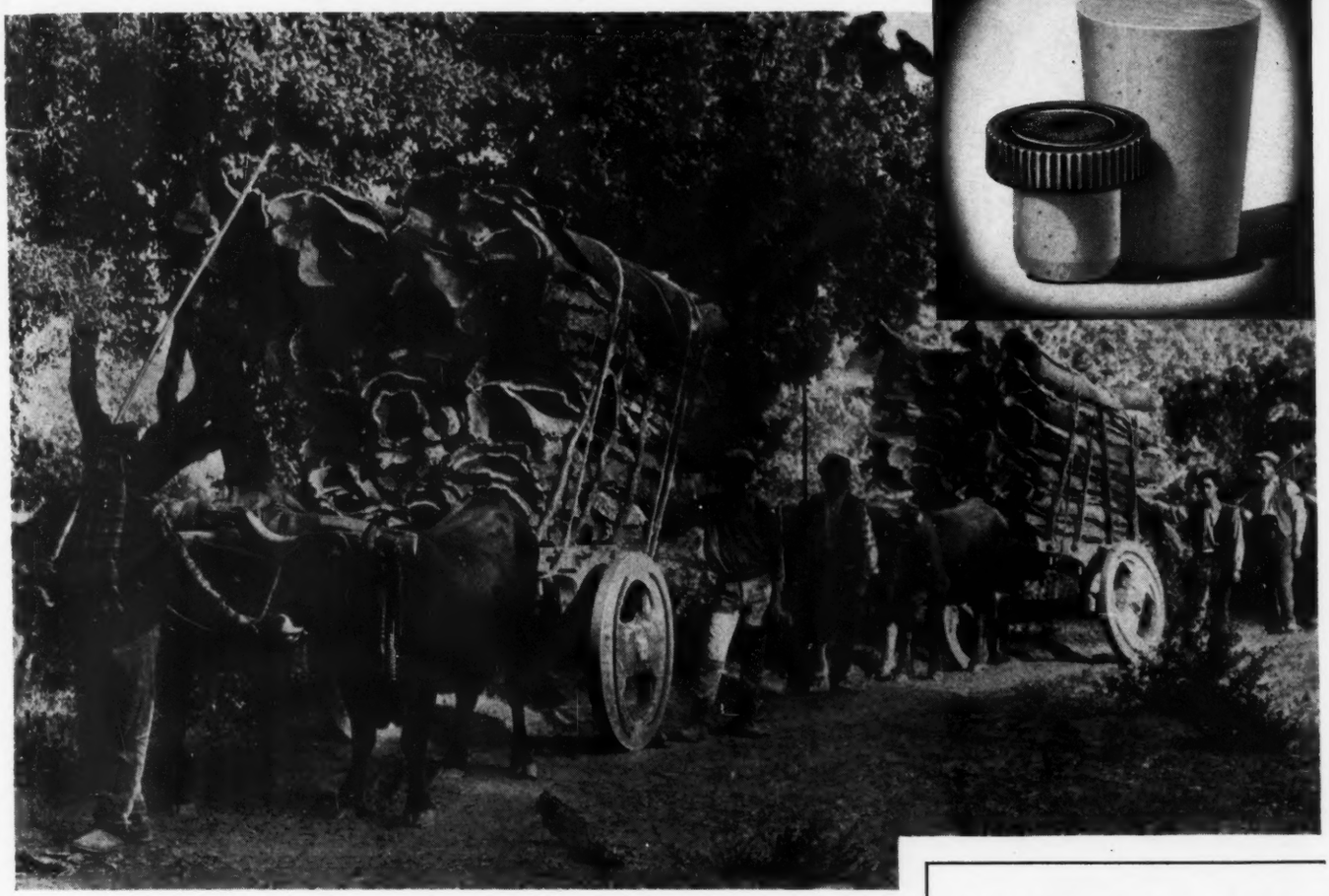
What will happen after the war can be now only a prediction, but it is safe to say that with an investment in aviation production now more five times greater than the automobile industry ever was, with 3,000,000 men trained in all branches of aviation, the development of air transport is going to be tremendous. How widely all this is used for transporting the world's goods will depend in a large measure on how efficiently such goods are packaged.

The war has made it imperative to devise efficient means for this type of military packing. A significant note is quoted from the OWI report: "Air cargo is prepared for Air Transport Command by Air Service Command, which *repacks* manufacturers' goods to conserve weight and space..."

In a peacetime, commercial world, there will be no such agency to do re-packing. Every industry benefiting by this modern service will have to supply the materials or know how to do its own packing.

[1] "Plywood Treasure Chest for Uncle Sam," Modern Packaging, August 1943. Page 69.
[2] "Dehydration to Prevent Corrosion," Modern Packaging, March 1943. Page 69.
[3] R. C. Wright, "Packing Methods to Prevent Freezing of Cut Flowers in Transit," *Florists Exchange and Horticultural Trade World*, April, 1937.
[4] "Saran Film," Modern Packaging, July 1943. Page 73. "Cellulose Acetate Sheeting," Modern Packaging, August 1943. Page 81.
[5] Clifford Guest, "Food Air Transport to Open Vast Field," *American Aviation*, July 15, 1943.

CORK · FOR SAFETY IN SEALING



No gasoline-saving plan here, but a frequently used means of transporting one of the world's most valuable yields

These native carts and teams are transporting freshly stripped Cork from the forests of Portugal to collection centers, to be baled and prepared for shipment. Eventually, after transit over land and sea, the best of this Cork will arrive in our Brooklyn factory for processing into Mundet Cork Closures. The fact that Mundet representatives have graded and selected Cork at the point of origin for 87 years typifies the care we take in all details of closure manufacture. It is further assurance of complete sealing security for your products—when you use Mundet Cork Closures. Consider Mundet not merely as a supply source but as a complete closure service.

Mundet Cork Corporation,
Closure Division, 65 S. 11th
St., Brooklyn, N. Y.

MUNDET

Closure Service

Mundet offices and representatives are located in these cities.

ATLANTA
339–41 Elizabeth Street, N.E.
BROOKLYN
65 South Eleventh Street
CHICAGO
135 West 63rd Street
CINCINNATI
427 West 4th Street
DALLAS
505 Southland Annex
DENVER
The Stone-Hall Co.
DETROIT
335 West Jefferson Avenue
HOUSTON
Commerce and Palmer Streets
JACKSONVILLE, FLA.
Laney & Delcher Warehouse
KANSAS CITY, MO.
1428 St. Louis Avenue
LOS ANGELES
1850 North Main Street
LOUISVILLE
Kentucky Bottlers Supply Co.
MEMPHIS
Memphis Bonded Warehouse
NEW ORLEANS
315–25 N. Front St.
PHILADELPHIA
856 N. 48th Street
ST. LOUIS
2415 South Third Street
SAN FRANCISCO
440 Brannan Street
also J. C. Millett Co.

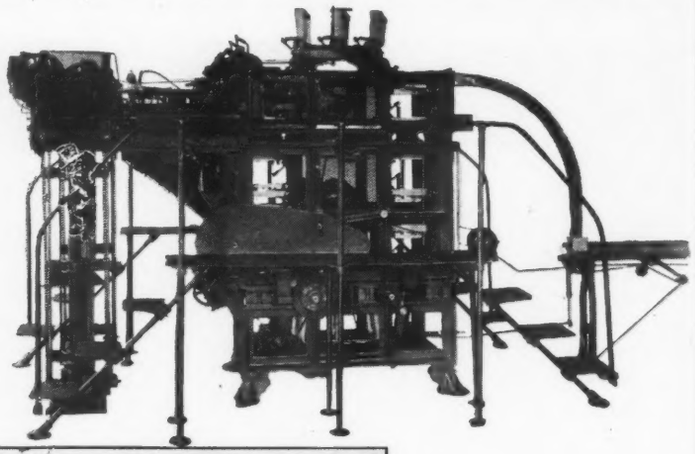
In Canada:
Mundet Cork & Insulation, Ltd.
35 Booth Avenue, Toronto

EMBOSSED-TOP CORKS • TAPERED CORKS • STRAIGHT CORKS • CROWNS

FOR SALE!

Priority Easily Obtained

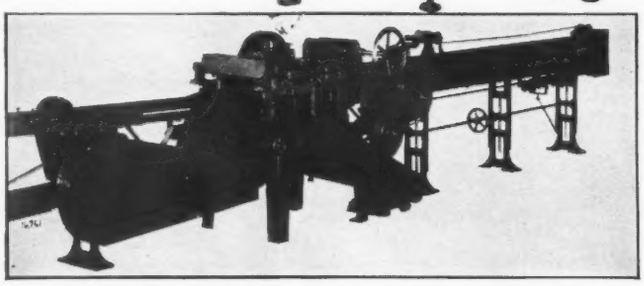
These Complete High-Speed PACKAGING MACHINES!



- **Automatic carton combination sealer, side seam gluer and bottom maker and top sealer, complete with dryer.**
- **High speed. Makes 90 packages a minute.**
- **Built to handle any one size within the following range:**

Minimum: Length 3"—Width 1¾"—Height 1½".

Maximum: Length 6"—Width 4"—Height 2".



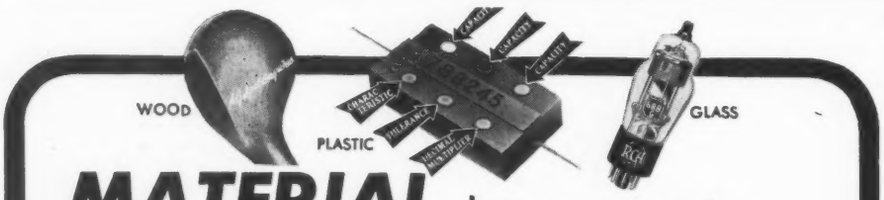
Here is an opportunity that occurs but rarely these days!

Due to a change in our factory planning, we are able to do without these modern high-speed packaging machines. They were built by the Battle Creek Bread Wrapping Machine Company and are still in their original crates. They are new, will give excellent service, and the price is right. Delivery can be immediate. Priority easily obtained.

Solve Your Wartime Packaging Problem by Seizing This Opportunity!

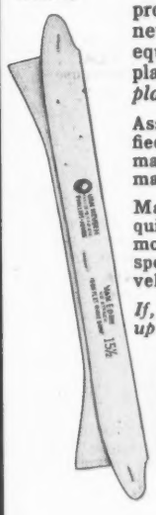
For full details, write to:

B. T. BABBITT, INC.
12-40 Broadway
Albany, N. Y.

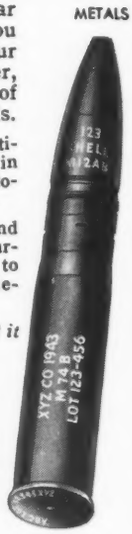


MATERIAL does not matter —when it comes to *MARKING*

TEXTILES



METALS



Putting your name or trade mark on articles of post war production may, because of material changes, bring to you new problems. They are not problems to us because our equipment is now being used to mark, identify or number, plain or in multiple colors — war production items of *plastics, metals, fabrics, paper,* and many other materials.

Assembly is facilitated by small part marking, sources are identified by code or other marking, step processing keyed, and in many other ways Markem equipment, synchronized to automatic speed handling, is serving on the war production line.

Markem equipment is versatile and adaptable to frequent and quick changes. Material, surface or contour present no insurmountable difficulties. Markem equipment is engineered to special needs and Markem service includes the laboratory development of inks to meet every requirement.

If, for present or future use, you have a marking problem, put it up to MARKEM. Ask for Bulletin D9.

PAPER

MARKEM
MACHINE COMPANY
KEENE N. H.

BOXES

PRECISION BUILT PRODUCTION MACHINES FOR INDUSTRIAL MARKING

MARKEM
Variable Designation
MARKING MACHINES

BOXES, LABELS, TAGS, ENVELOPES. Easy-to-operate Markem Machines print them with trademark and specification imprints, quickly, easily and inexpensively. Print boxes packed or empty. Labels, loose or on the box. Materials may be paper, boxboard, cardboard, fibre, wax paper or plastic. Also glassine envelopes.

TICKETS, TAGS, LABELS from CONTINUOUS ROLLS, one or two colors; cut-off or perforated; round or square corners; gummed or ungummed stock. Quantity may be automatically controlled. Paper, cloth, fibre, parchment or plastic.

COLLARS, SOCKS, STOCKINGS, SHIRTS, SHOE LININGS and all that myriad of large, hard-to-handle pieces of textiles, leathers and synthetics are marked in necessary detail and trademarked — all with special process Markem inks which assure legibility and durability of impression. Color possibilities unlimited.

GLASS, METAL, WOOD, PLASTICS, PAINTED SURFACES, RUBBER SHEETS —even ABRASIVES! There are Markem machines to trademark, decorate, size-mark, [illegible]-mark and do all other stampings on these products in the most approved Markem manner.

SHAPE AND SUBSTANCE PRESENT NO UNSOLVED PROBLEMS! There's a Markem machine to identify or decorate every part or product known to industry. And out of the Markem laboratories come special process inks, rotatable type wheels, special type bars or master printing plates so that Markem is the only source of supply you need for marking machines, devices and supplementary materials.

Tell us today, what you want to mark and how you want to mark it. Send for catalog D9

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Laminated **PAPERS AND BOARD**

Men who know, suggest that laminations will be foremost in post-war developments.

Hudson Sharp has pioneered in building the best of laminating machines for foils, papers, boards and other cellulose products used in packaging and shipping.

Today we are building weapons to beat the Axis. Tomorrow we will again be able to build you machines to beat your paper converting problems.

Ask us about some of the new developments in machines for your post-war production problems.

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

SPECIALISTS
in the manufacture of
CAN & BOTTLE CLOSURES

LET us quote you on your requirements. Hundreds of dies and molds available for Essential Oil Cans, Sprinkler Tops, Screw Caps, Lead and Tin Coated Spouts, Metal Specialties. 85 years' experience in meeting the needs of packagers. Call upon us for aid.

CONSOLIDATED FRUIT JAR COMPANY
NEW BRUNSWICK • NEW JERSEY

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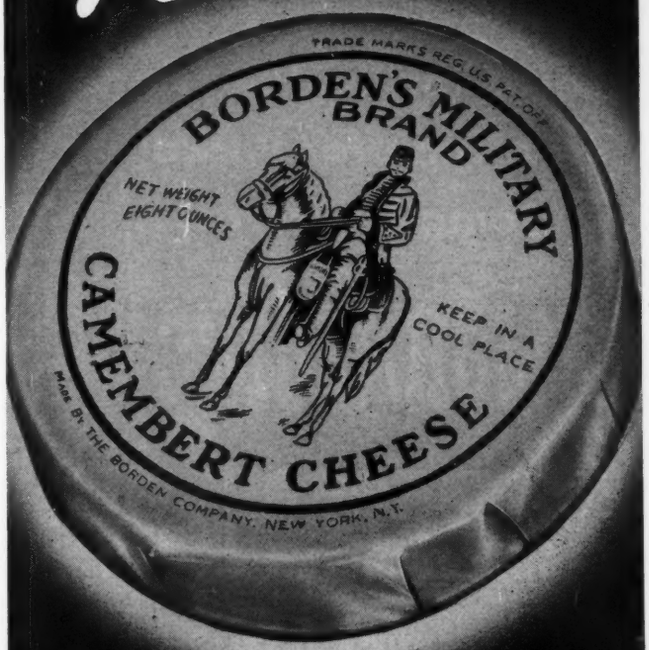

TRADE MARKS REG. U.S. PAT. OFF.
BORDEN'S MILITARY BRAND
NET WEIGHT EIGHT OUNCES
KEEP IN A COOL PLACE
CAMEMBERT CHEESE
MADE BY THE BORDEN COMPANY, NEW YORK, N.Y.

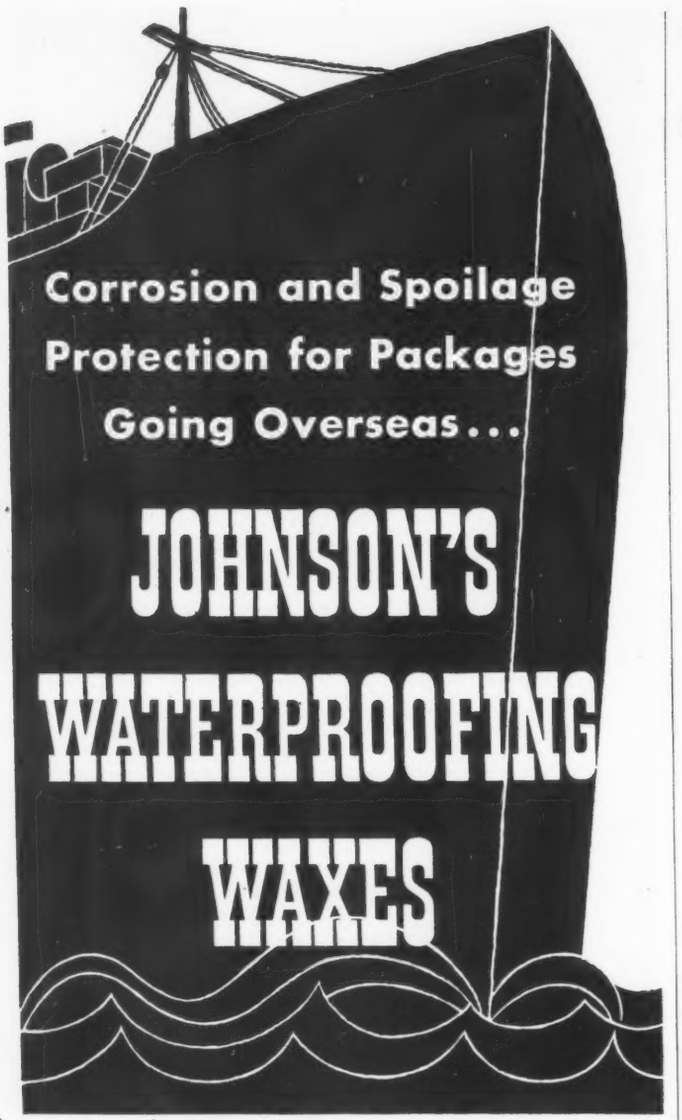
CELUMINA

Cheese Wrappers

FOIL-LIKE BRILLIANCE with CELLOPHANE PROTECTION

A beautiful wrapper . . . with the bright sheen of polished silver . . . and a strong protective coating . . . tasteless . . . odorless . . . tear-resistant . . . that's Celumina, a replacement for war-scarce foil. Celumina has many advantages. It handles easily, wraps fast, and withstands scuffing. It unwraps in one piece and can be re-wrapped. Attractively printed in one or more colors. For camembert, blue, process and other cheeses. Ask for samples.

GENERAL FELT PRODUCTS, INC.
68 THIRTY-FIFTH STREET BROOKLYN, N. Y.



Small arms ammunition, surgical instruments, metal products of many kinds going overseas need extra protection against corrosion. Many products are now protected by the application of a coating of Johnson's Waterproofing Waxes to the packages which contain them. These special waxes are also used to seal food packages going abroad, and thus help prevent spoilage.

Less tacky coating. Johnson's Waterproofing Waxes dry quickly and permit piling cartons one upon another shortly after dipping, yet they are tacky enough to insure flexibility at low temperatures.

Easy to handle. Johnson's Waterproofing Waxes are supplied in 40-lb. cakes packed in special cartons or bags. Each cake is small enough to be placed conveniently in the melting tank. The wax cakes are *clean* when placed in the tank and therefore the contents of the tank remain clean.

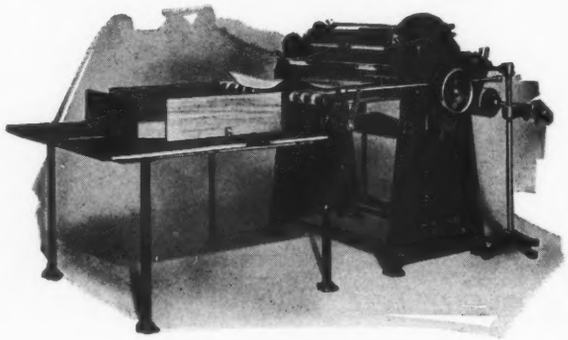
Transparent. The protective film deposited around the package is sufficiently clear to allow reading of labels underneath — important when packages are stenciled or coded for identification.

These waxes meet U S Army and Navy specifications for overseas shipments Write S. C. Johnson & Son Inc. for full information on prices and sizes now

S. C. JOHNSON & SON, Inc.
Industrial Wax Division, Dept. MP-93, Racine, Wisconsin

★ *Buy United States War Bonds and Stamps* ★

Many Great Nations Are Already Planning Post War Programs
as are also many business men—ARE YOU?



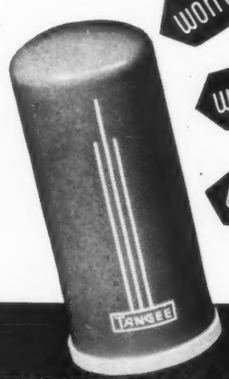
The Beck Sheeter

After "Unconditional Surrender" is a fact of history, you will want the highest productive Sheeting equipment obtainable, to meet competition. Your choice may be from the hi-speed Electric Eye machines for "spot sheeting" down to the more simple standard machines for plain work.

Write us to-day for to-morrow.

CHARLES BECK MACHINE CO.
13th & Callowhill Streets Philadelphia, Pa.

Finally!
A DURABLE DECORATING MATERIAL FOR PLASTIC SURFACES...
won't SCRATCH OFF
won't WASH OFF
won't RUB OFF



CREATIVE PRINTMAKERS GROUP 14 W. 17 ST. N.Y.C.
SILK · SCREEN · PRINTERS
TO · THE · COSMETICS · TRADE

WILLIAMSON V-CASE SEALING GLUES

are doing the job!

These glues are sealing tough solid fibre V-cases for export shipments of munitions of war.

They produce a strong, permanent bond with minimum time under pressure. Exceptional machine operating qualities permitting continuous all-day runs at maximum production rates. Also suitable for hand sealing.

Water soluble . . . machines and hands readily cleaned with water, but *when glue film is dry* the joint will stand water immersion for days. *Working sample sent on request.*

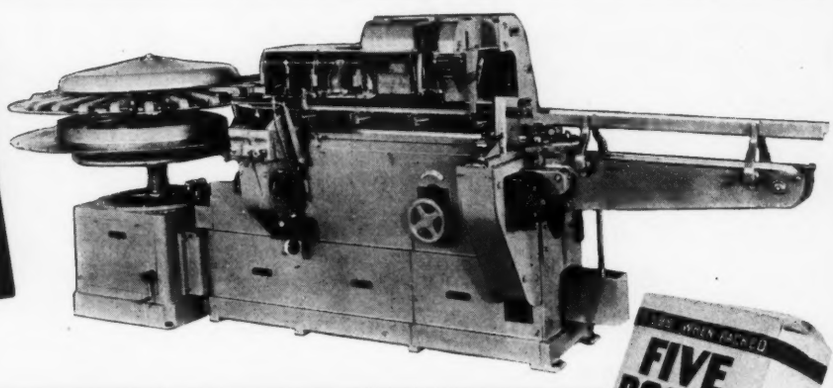
V-CASES must arrive INTACT!

WILLIAMSON ADHESIVES, INC.

2323 West 18th Street, Chicago 8, Ill.

WE DO NOT BELIEVE THERE IS ANY SUBSTITUTE FOR QUALITY

SEALTITE



Seals BAG PACKAGES *FASTER with LESS HELP*

SEALTITE Bag Sealers pay dividends any time in increased production and reduced labor costs but right now the savings are greater than ever. SEALTITE seals any standard 2 to 10 lb. bag faster and with less help than it can be sealed by other methods.

The SEALTITE package is well settled and nicely squared at top, bottom and sides. A most attractive package, it can be stacked like a carton for display purposes. Since SEALTITE packages are sift-proof, they are ideal for sugar, salt, flour coffee and similar commodities.

Write for complete information on this better way to close paper bags.

ARMY E NAVY

CONSOLIDATED PACKAGING MACHINERY CORP.

BUFFALO, N. Y.

For coloring glass containers to improve eye appeal think of the

COLOROID

CORPORATION

When restrictions on lacquer are again lifted we will be ready to serve you . . . .

• There may be little we can do for you now but when restrictions on chemicals are relaxed we will again be in a position to serve you. Our job is adding new beauty and over-all color elegance to neatly designed glass containers, plastic caps and similar items. Your product may also require protection from light rays. Our process is adapted to VOLUME production.

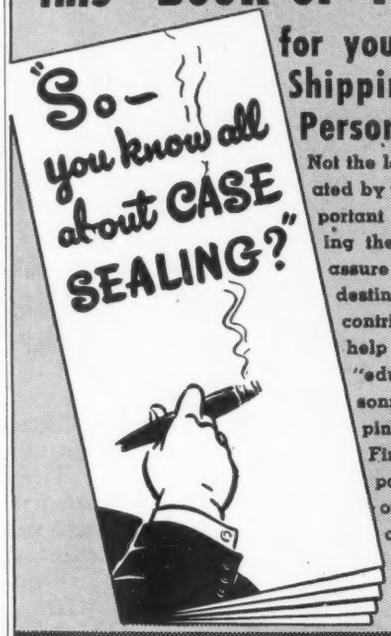
COLOROID *Corporation*

6911 Lorain Ave. · Cleveland, Ohio

Yours for the Asking . . .

this "BOOK OF THE YEAR"

for your Packing and Shipping Department Personnel



Not the least of the problems created by war conditions is the important matter of properly sealing the shipping container to assure safe delivery at distant destinations. • As a service contribution to Industry, to help meet this situation and "educate" inexperienced personnel in packing and shipping departments, The F. G. Findley Company has prepared a 24-page Handbook on "Case Sealing"...available to you without cost or obligation. . . . Write for it today.

Findley's INDUSTRIAL ADHESIVES

1230 N. 10th ST. MILWAUKEE 5, WIS.

ERROR-PROOF COPIES *in a Jiffy*

Photo-exact copies for your office, shop, branch or distant plant are made fast and at low cost with A-PE-CO. One copy or a hundred in jig time — and A-PE-CO *can't* make mistakes. Copies directly from blueprints.

Non-Fading Photo-Copies of letters • documents • records • blueprints • pictures • drawings

A-PE-CO "Photo exact"

PHOTO-COPYER **$55.00**

Same-size copies of anything up to 18"x 22". Accepted as legal evidence. Eliminates steno-copying, tracing, proof-reading. Photo-copies direct from blueprints, graphs, tracings, telegrams, receipts, shop orders — anything written, printed, drawn, photographed. Endless uses for A-PE-CO. Needed by *all* departments. Big savings. Thousands in satisfactory use.

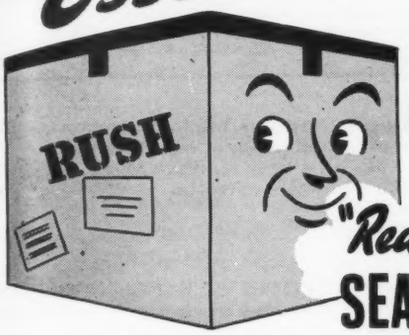
No Camera — No Darkroom — Low Cost

Simple, fast. No focusing. Conserves man-hours. Any office employee quickly becomes expert. Low cost per copy, lowest investment in equipment. Saves other equipment. Put A-PE-CO on any available desk or table. Immediate delivery. Representatives in principal cities and Canada. Write for A-PE-CO folder.

AMERICAN PHOTOCOPY EQUIPMENT CO.

2849 N. Clark St. Dept. FD-9 Chicago 14, Illinois

Essential for MODERN SHIPPING

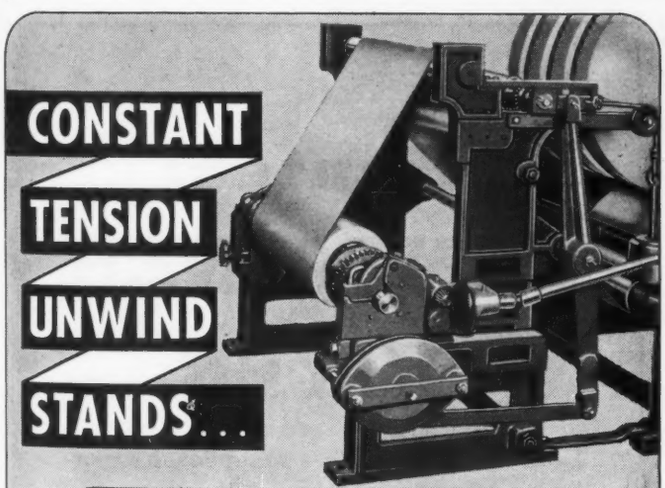


"Red Streak" SEALING TAPE

Just good paper and plenty of glue make Red Streak Sealing Tapes a certain insurance against shipping losses. Have you tried it?

Ask us for samples and prices.

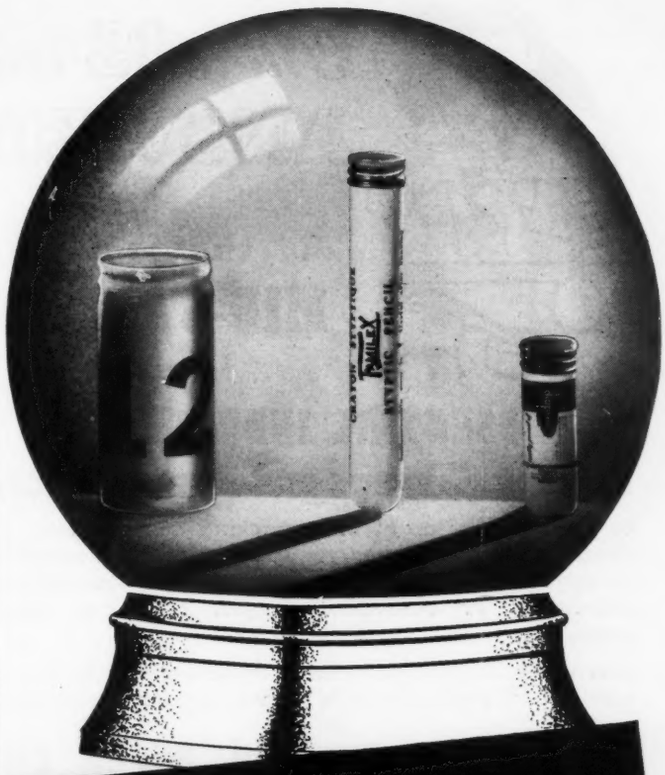
BROWN-BRIDGE MILLS, Inc., Troy, Ohio



CAMACHINE Constant Tension Unwind Stands are used on the unwind end of slitters, winders, web printing presses and other roll processing machines. With this equipment the tension on the web remains constant from start to the finish of the run without the attention of the operator. This assures rewound rolls of uniform density from the core out. On multi-color web printing presses it aids in maintaining accurate lengthwise register. Write for folder.

CAMERON MACHINE CO., 61 Poplar St., Brooklyn, N. Y.
Midwest Sales Office, 111 W. Monroe St., Chicago, Ill.

· CAMACHINE ·



A PEEK INTO POST-WAR PACKAGING

with LUSTEROID VIALS AND TUBES

When "the duration" comes to an end, you won't have to wait for new developments in packaging. The answer will be ready—*waiting for you*—in LUSTEROID vials and tubes.

All the advantages of modern plastics will be available to you in these remarkable containers. Strength and rigidity for protection! Transparency for ideal display. Color and print-ability for smart merchandising! Light weight and unbreakable qualities for economy.

There's a wealth of possibilities to intrigue the package designer—to surprise the budget-planners—to please the distributing organization and to satisfy the ultimate consumer.

LUSTEROID vials and tubes come in all colors—clear or opaque—with cork, slip-on and screw-cap closures, in standard diameters from ¼" to 1¼" and lengths up to 6".

Write for complete facts today

Lusteroid Container co., inc.

FORMERLY LUSTEROID DIVISION OF SILLCOCKS-MILLER COMPANY

OFFICE AND FACTORY
10 PARKER AVENUE, WEST
MAPLEWOOD, N. J.

MAILING ADDRESS:
SOUTH ORANGE, N. J.

There IS an ANSWER

... that is why

MID-STATES

invites

ESSENTIAL INDUSTRIES

Jobbers, Shippers and Manufacturers

to send in any problem in packing and shipping or production. Problems which may be overcome through the use of adhesives, coatings, laminating, saturating or combining paper, cloth, or other materials.

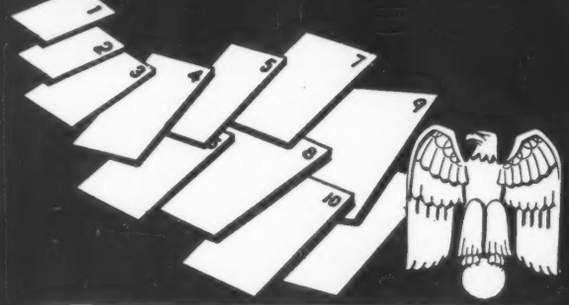
Have you a problem along these lines? Write us about it! We may be able to find a practical solution.

MID-STATES GUMMED PAPER CO.

Manufacturers of Green Core Paper and Cloth Gummed Tapes, Mid-States *Really Flat* Gummed Papers, Green Core Stay Papers, and Green Core Gummed Holland and Gummed Cambrics.

2515 SOUTH DAMEN AVENUE • CHICAGO, ILL.

ARE YOU COLLECTING
THESE COLORFUL FACTS?



Collecting EAGLE'S COLOR FACTS will pay you dividends in information if you are interested in this important subject. If you would like your name added to our mailing list, fill in coupon and mail today.

INDIVIDUAL _____

COMPANY _____

ADDRESS _____

EAGLE PRINTING INK COMPANY
DIVISION GENERAL PRINTING INK CORPORATION
100 SIXTH AVENUE, NEW YORK 13, N. Y.
CHICAGO CAMBRIDGE JERSEY CITY
BALTIMORE TORONTO

Classified Advertisements

All classified advertisements payable in advance of publication. Rates:. $5.00 up to sixty words; enclosed in border, $10.00 per inch. Publisher reserves the right to accept, reject or censor a classified copy.

WILL PURCHASE proved formulae made from non-essentials for moisture and oil proofing paper containers either by dipping or spraying. Must be heat sealing. First instance to Box 1871.K., G.P.O., Sydney, Australia.

WANTED. A TOP-NOTCH FOLDING PAPER BOX PRODUCTION MAN by an old established company located in Greater New York, doing a great variety of printed and lithographed cartons and specialty work, utilizing Thompson and cylinder cutting and creasing equipment. A thoroughly seasoned, energetic individual who can take full charge of production in this position. Our Staff knows of this advertisement. Confidential. Full details, salary required and draft status, please. Reply Box 186, Modern Packaging.

WANTED AUTOMATIC PACKAGING MACHINERY for free flowing powder in a carton size 4½ x 2½ x 1¼. Please state full details as to price, name and age of equipment offered. Reply Box 187, Modern Packaging.

POSITION WANTED. Capable man, age 40, paper and paper converting experience, desires responsible position. Reply Box 188, Modern Packaging.

Wanted:
CONTAINER BUYER

Large food concern has exceptional opportunity for man capable of handling the buying of packaging materials and containers, and inventory control. Sales experience in container field would be helpful. Prefer man 38–45 or draft deferred. Attractive salary to qualified man. Position is permanent and offers future. If interested, send letter giving age, draft status, education, and employment record. Men in department know of this opening. Replies held confidential and may be made through third party.

Address Box 185, Modern Packaging.

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MODERN PACKAGING

BRESKIN PUBLISHING CORPORATION

122 East 42nd St. **New York City**

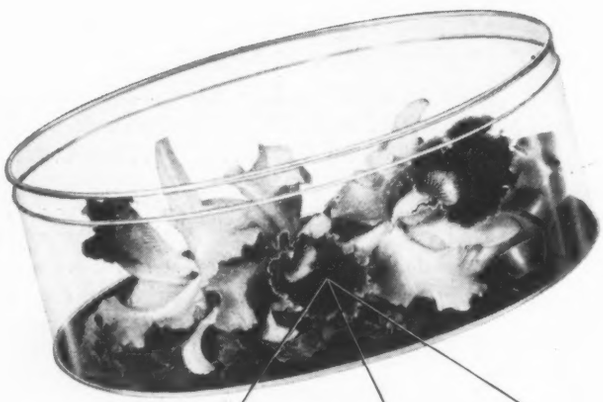
NOTE TO PACKAGE FABRICATORS—

Maybe you've wondered if Vuepak will be back after the war...a question this advertisement from Saturday Evening Post, Time, Fortune, Newsweek, Business Week and U. S. News will help to answer.

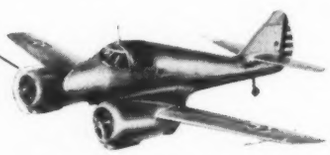
Then add to this promise of an even better postwar Vuepak the fact that postwar businessmen will be even more eager for the plus sales Vuepak has proved it can win...and you get a strong hint of what the future holds!

Maybe you've wondered . . .

Whatever happened to Vuepak?



It wasn't long ago that you saw Vuepak everywhere. Remember? In glamorous transparent flower boxes, in countless smart counter displays, in "see at a glance" boxes, canisters and containers for quality products of almost every description. Yes, Monsanto's new rigid transparent packaging material did much to launch a whole new trend in packaging. **And then, with war, packages of Vuepak disappeared from the counters . . . and the name that was fast becoming a part of the language ceased being heard on every side.** Perhaps you've wondered why? This is an answer...*and a promise, too,* that after victory Vuepak will be back to lend matchless protection-with-visibility to the better products you'll buy in peace with those War Bonds you're getting now. MONSANTO CHEMICAL COMPANY (Executive Offices, St. Louis) Plastics Division, Springfield, Massachusetts.



WINDOWS and skylights of trainer planes and gliders, made of non-shatterable heavy gauge Vuepak, give testimony to its toughness, rigidity and flawless transparency. All these are but a few of the present day jobs Vuepak is doing . . . until it can return to its original job, packaging the better products of a better tomorrow.

EYESHIELDS of Vuepak, colored to cut down desert glare. Goggles with interchangeable Vuepak lenses to meet varying conditions of sea, air and land fighting. Millions of sturdy eye pieces for gas masks. Just three more of the many wartime jobs being shouldered by Vuepak.

VUEPAK, in heavy gauge weights, goes today into face shields to help avoid many lost-time accidents in essential war industry. Laminated to wire, it also can replace glass in the windows of essential war plants, preventing the danger of flying slivers from possible bomb explosions.

MONSANTO PLASTICS

"E" FOR EXCELLENCE—The Army-Navy "E" burgee with two stars, "representing recognition by the Army and the Navy of especially meritorious production of war materials" over a two-year period, flies over Monsanto.

SERVING INDUSTRY . . . WHICH SERVES MANKIND

THE LID'S OFF ON POST-WAR PACKAGING!

RUB YOUR EYES! Yes . . . you *are* seeing more —much more—than just an open box.

For this box is a war baby. As such, it can give you some helpful hints on *post*-war packaging.

And what's this box got . . . that you should know about? First of all it's a radio battery container now being used by the armed services. That means it's rugged, durable. That means it's water-resistant and possesses high dielectric strength. Important, too, is to note the size—larger than 12″x12″x3″.

Here's still another example of Durez plastics at war . . . fresh proof that plastics are making continual progress in the packaging field. For if you have always thought of plastics being limited to small objects—lipsticks, compacts and the like—the armed services can tell you differently!

When Durez plastics come marching home with the boys from Berlin and Tokyo . . . you'll find their sheer utility only one of the reasons for giving these molding compounds first consideration for *your* packages. They've got color, too—sparkling color that's part and parcel of their lustrous, smooth finish. We needn't tell you how "eye appeal" can stimulate sales.

So if you have plans for a prize-winning *post*-war package . . . keep posted on Durez war-spurred developments!

DUREZ PLASTICS & CHEMICALS, INC.

409 Walck Road **North Tonawanda, N. Y.**

DUREZ

PLASTICS THAT FIT THE JOB

COMPLETE PACKAGING SERVICE TO INDUSTRY

KEEPING IN STEP

WITH GLOBAL WARFARE

Producing packages to deliver America's food and equipment to fighting men all over the world is not a job for a "one-material-house".

SHELLMAR PACKAGING ENGINEERS HAVE EVERY PACKAGING MATERIAL OF MERIT AT THEIR COMMAND—CELLOPHANE, PLIOFILM, SARAN, METAL FOILS, PAPERS, LACQUER COATINGS, ETC.

Our laboratory has been able to solve the most intricate packaging problems by laminating combinations of these materials and by checking results on new testing devices DESIGNED TO DUPLICATE ALL CLIMATES.

Shellmar packaging engineers are trained to study your problem with your technical staff, plan and construct your packages and train your personnel in correct application.

SHELLMAR
PRODUCTS COMPANY

COMPLETE PACKAGING SERVICE TO INDUSTRY

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MOUNT VERNON, OHIO
PASADENA • CALIFORNIA
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